Ref. No. 3420

ONKYO SERVICE MANUAL

QUARTZ SYNTHESIZED TUNER AMPLIFIER
MODEL TX-901
MODEL TX-903

Black and Silver models

BHMD, BHMDN	120V AC, 60Hz
BHMP, BHMPF, MP, MPF	230V AC, 50Hz
BHMW	120V or 220V AC, 50/60Hz
BHMQA	240V AC, 50Hz

SAFETY-RELATED COMPONENT WARNING!!
COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

ONKYO
AUDIO COMPONENTS

SPECIFICATIONS

AMPLIFIER SECTION	TX-903	TX-901
Power Output:	60 watts per channel, min. RMS, at 8 ohms, both channels driven, from 40Hz to 20kHz, with no more than 0.2% THD.	45 watts per channel, min. RMS, at 8 ohms, both channels driven, from 40kHz to 20kHz, with no more than 0.3% THD.
Dynamic Power Output:	2 × 100 watts at 4 ohms 2 × 75 watts at 8 ohms	2 × 80 watts at 4 ohms 2 × 60 watts at 8 ohms
Continuous Power Output:	2 × 80 watts at 4 ohms, 1kHz (DIN) 2 × 65 watts at 8 ohms, 1kHz (DIN)	2 × 60 watts at 4 ohmsm, 1kHz (DIN) 2 × 50 watts at 8 ohms, 1kHz (DIN)
Total Harmonic Distortion:	0.2% at rated power 0.1% at 30 watt output	0.3% at rated power 0.1% at 30 watt output
IM Distortion:	0.2% at rated power 0.1% at 30 watt output	0.3% at rated power 0.1% at 30 watt output
Damping Factor:	50 at 8 ohms	50 at 8 ohms
Frequency Response:	20 — 30,000 Hz ± 1dB	20 — 30,000 Hz ± 1dB
RIAA Deviation:	20 — 20,000 Hz ± 0.8dB	20 — 20,000 Hz ±0.8dB
Sensitivity and Impedance:	Phono: 2.5mV/50 kohms CD/Tape Play: 150mV/50 kohms Tape Rec: 150mV/3.5 kohms	Phono: 2.5mV/50 kohms CD/Tape Play: 150mV/50 kohms Tape Rec: 150mV/3.5 kohms
Phono Overload:	120mV RMS at 1kHz, 0.2% TDH	120mV RMS at 1kHz, 0.3% THD
Signal-to-Noise Ratio:	Phono: 80dB (at 5mV input, IHF-A) CD/Tape: 100dB (IHF-A)	Phono: 80dB (at 5mV input, IHF-A) CD/Tape: 100dB (IHF-A)
Tone Controls:	Bass: ± 10dB at 100Hz Treble: ± 10dB at 10kHz	Bass: ± 10dB at 100Hz Treble: ± 10dB at 10kHz
Muting:	— ∞	—
LOUDNESS (—30dB):	+7dB at 70Hz, +5dB at 10kHz	+7dB at 70Hz, +5dB at 10kHz

TUNER SECTION		
FM:	—220V/Worldwidemodels—	—120V model—
Tuning Range:	87.50—108.00MHz (50kHz steps) 87.5—108.00MHz (50kHz steps) or (200kHz steps) (Worldwide model)	87.9—107.9MHz (200kHz steps)
Usabls Sensitivity:	Mono: 12.4dBf, 1.2 μV, 75ohmd 1.2 μV (S/N26dB, 40kHz Devi.) 75ohms DIN Stereo: 19.2dBf, 2.5 μV, 75ohms 25 μV (S/N 46dB, Devi.) 75ohms DIN	Mono: 12.4dBf, 2.3 μV Stereo: 18.2dBf, 4.5 μV
50dB Quieting Sensitivity:	Mono: 18.2dBf, 2.2 μV, 75ohms Stereo: 38.2dBf, 22 μV, 75ohms	Mono: 18.2dBf,4.5 μV Stereo: 38.2dBf, 45 μV
Caputure Ratio:	1.5dB	1.5dB
Image Rejection Ratio:	85dB	40dB
IF Rejection Ratio:	90dB	90dB
Signal-to-Noise Ratio:	Mono: 70dB Stereo: 65dB	Mono: 70dB Stereo: 65dB
Atternate Channel Attenuation:		55dB
Selectivity:	50dB DIN (±300kHz, 40kHz dev.)	
AM suppression Ratio:	50dB	50dB
Harmonic Distortion:	Mono: 0.15% Stereo: 0.30%	Mono: 0.15% Stereo: 0.30%
Frequency Response:	30—15,000Hz±1.5dB	30—15,000Hz±1.5dB
Stereo Separation:	40dB at 1kHz 30dB at 100—10,000Hz	40dB at 1kHz 30dB at 100—10,000Hz
Muting Level:	17.2dBf, 4 μV	17.2dBf, 4 μV
AM:		
Tuning Range:	522—1610kHz (9kHz steps) 522—1610kHz (9kHz steps) or 530—1710kHz (10kHz steps) (World wide model)	530—1710kHz(10kHz steps)
Usable Sensitivity:	30 μV	30 μV
Image Rejection Ratio:	40dB	40dB
IF Rejection Ratio:	40dB	40dB
Signal-to-Noise Ratio:	40dB	40dB
Harmonic Distortion:	0.8%	0.8%

GENERAL	TX-903	TX-901
Dimensions (W×H×D):	455×120×316mm 17-15/16" ×4-6/8" ×12-7/16"	455×120×316mm 17-15/16" ×4-6/8" ×12-7/16"
Weight:	8.0kg, 17.6 lbs.	7.2kg, 15.9 lbs.

Remote control transmitter RC-223S (Only Model TX-903)

Transmitter:	Infrared
Signal range:	Approx. 5 meters (16ft. × 4")
Power supply:	Two "AA" batteries(1.5V × 2)

Specifications and features are subject to change without notice.

SERVICE PROCEDURES

1.Replacing the fuses

For continued protection against fire hazard,replace only with same type and same rating fuse.

Circuit No.	Part No.	Description	Model	Type
F901	252049	4A(ST-6),Primary	TX-901	MD/MW
F901	252050	5A(ST-6),Primary	TX-903	MD/MW
F902	252074	2A-SE-EAK,Primary	TX-901	MP/MW/MQ
F902	252075	2.5A-SE-EAK,Primary	TX-903	MP/MW/MQ
F951	252074	2A-SE-EAK,AC outlet	TX-903	MP/MQ

2.Safety-check out

(Only U.S.A. model)
After correcting the original service problem,perform the following safety check before releasing the set to the customer.
Connect the insulating-resistance tester between the plug of power suuply cord and nickel screw on the back panel.
Specifications: 3.3Mohm ±10% at 500V.

3.Change of voltage

Worldwide models are equipped with a voltage selector to conform with local power supplies. This switch is located on the back panel. Be sure to set this switch to match the voltage of the power supply in your area before turning the power switch on.
This swith is set to 220V at the factory. Voltage is changed by sliding the groove in the switch with the screwdriver to the right or left. Confirm that the switch has been moved all the way to the right or left before turning the power switch on.

4.Step band selector switch

Worldwide models are equipped with a step band selector switch. This switch is located on the back panel. This switch is set to 50kHz (FM) and 9kHz (AM) at the factory, but may have to be reset to 100kHz and 10kHz depending on the area where the unit is used.

De-emphasis	FM step	AM step
Europe: 50μsec	50kHz	9kHz
U.S.A.: 75μsec	200kHz	10kHz

5.Changing the band step

With the exception of the models below, a BAND STEP selector switch is not provided.

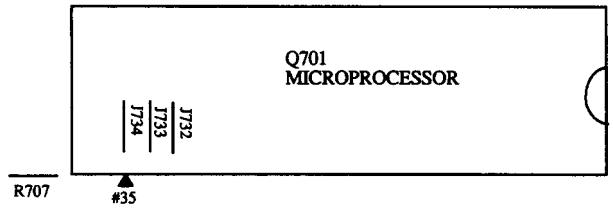
(FM)

MODEL	BAND STEP	R707(10kΩ)	J734
UD	200kHz→50kHz	Add	Cut
UP/UQ	50kHz→200kHz		Shorted

(AM)

MODEL	BAND STEP	R709(10kΩ)	J732
UD	10kHz→9kHz		Shorted
UP/UQ	9kHz→10kHz	Add	Cut

Refer to the page 23.



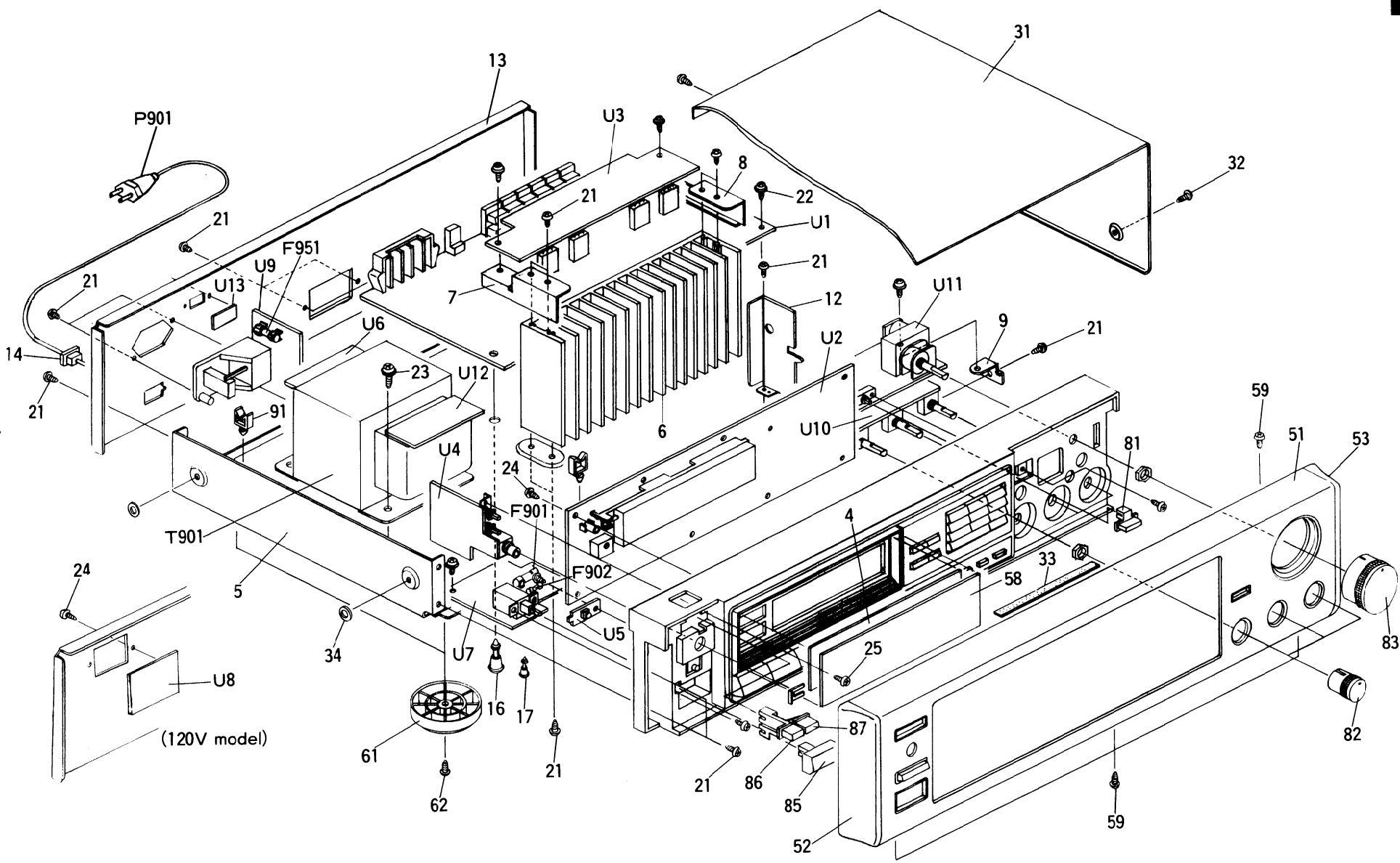
DISPLAY CIRCUIT PC BOARD

6.Memroy preservation

This unit does not require memory preservation batteries. A built-in memory power back-up system preserves contents of the memory during power failures and even when the unit is unplugged. The unit must be plugged in and the power switch turned on and off once in order to charge the back-up system. Note that since this is not a permanent memory,the power switch must be turned on and off a few times each month to keep the back-up system operative. The period of time during which memory contents are preserved after power has last been turned off varies depending on climate and placement of the unit.
On the average, memory contents are protected over a period of 3 to 4 weeks (a minimum of 2 weeks) after the last time power has been turned off. This period is shorter when the unit is exposed to very high humidity or used in an area with an extremely humid climate.

EXPLODED VIEW

MODEL TX-903



PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	27110680Y	Front bracket <B>
	27110681Y	Front bracket <S>
4	28133254Y	Back plate
5	27100228Y	Chassis
6	27160293Y	Radiator
7	27141441Y	Bracket LH
8	27141442Y	Bracket RH
9	27141443Y	Bracket PC
12	27130643AY	Bracket,shield
13	27121535Y	Back panel <D>
	27121535-1Y	Back panel <P>
	27121535-3Y	Back panel <W>
	27121535-4Y	Back panel <Q>
14	27300750	⚠ Bushing
16	27190524	KGLS-14R,Holder
17	27190266	KGLS-12R,Holder
21	834430088	3TTS+8B(BC),Self-tapping screw
22	831130088	3TTW+8B,Self-tapping screw
23	830440089	4TTC+8C(BC),Self-tapping screw
24	833430080	3TTP+8P(BC),Self-tapping screw
25	82143006	3P+6FN(BC),Pan head screw
26	801433	3SMS10W.SW+14B(BC),Sems self-tapping screw
31	28184471AY	Top cover
32	834430088	3TTS+8B(BC),Self-tapping screw
33	28140680	0.5×180×8,Cushion
34	27270212	Spacer <P/W/Q>
51	1A331701K	Front panel ass'y <B>
	1A332701K	Front panel ass'y <S>
52	28125226BY	End cap L
53	28125227BY	End cap R
58	28191617Y	Clear plate
59	833430080	3TTP+8P(BC),Self-tapping screw
60	28135199	Badge
61	27175254	Leg
62	834430088	3TTS+8B(BC),Self-tapping screw
71	25060044	Terminal GND
81	28324162Y	Knob LOUD <B>
	28324177Y	Knob LOUD <S>
82	28324150-1Y	Knob LEV <B>
	28324151	Knob LEV <S>
83	28324163	Knob VOL <B>
	28324182	Knob VOL <S>

REF.NO.	PART NO.	DESCRIPTION
85	28324140	Knob POW <B>
	28324184	Knob POW <S>
86	28324170Y	Knob SP A <B>
	28324172Y	Knob SP A <S>
87	28324171Y	Knob SP B <B>
	28324173Y	Knob SP B <S>
91	27300833	WS-2NS,Clamp
F901	252050	⚠ 5A(ST-6),Fuse <D/W>
F902	252075	⚠ 2.5A-SE-EAK,Fuse <P/W/Q>
F951	252074	⚠ 2A-SE-EAK,Fuse <P/Q>
P901	253163Y or	⚠ AS-UC-6 #18,
	253174Y	⚠ Power supply cord <D>
	253164Y or	⚠ AS-CEE,
	253175Y	Power supply cord <P/W>
	253170	⚠ AS-SAA,Power supply cord <Q>
P951	25050346	⚠ NSCT-2P173,AC outlet <Q>
Q503,Q504	2202282,	2SA1265N-R,
	2202283,	2SA1265N-O,
	2201693,	2SA1491-O,
	2201694 or	2SA1491-Y or
	2201696	2SA1491-P,Power amplifier transistor
Q505,Q506	2202292,	2SC3182N-R,
	2202293,	2SC3182N-O,
	2201703,	2SC3855-O,
	2201704 or	2SC3855-Y or
	2201706	2SC3855-P,Power amplifier transistor
T901	2300753AY	⚠ NPT-1129D,Power transformer <D>
	2300754Y	⚠ NPT-1129P,Power transformer <P>
	2300755Y	⚠ NPT-1129DG,Power transformer <W>
	2300756Y	⚠ NPT-1129Q,Power transformer <Q>
U1	1A331525-1	NARF-4325-1,Tuner circuit pc board ass'y <D>
	1A331525-1A	NARF-4325-1A,Tuner circuit pc board ass'y <P/Q>
	1A331525-1B	NARF-4325-1B,Tuner circuit pc board ass'y <W>
U2	1A331526-1	NADIS-4326-1,Display circuit pc board ass'y <D>
	1A331526-1A	NADIS-4326-1A,Display circuit pc board ass'y <P/Q>
	1A331526-1B	NADIS-4326-1B,Display circuit pc board ass'y <W>

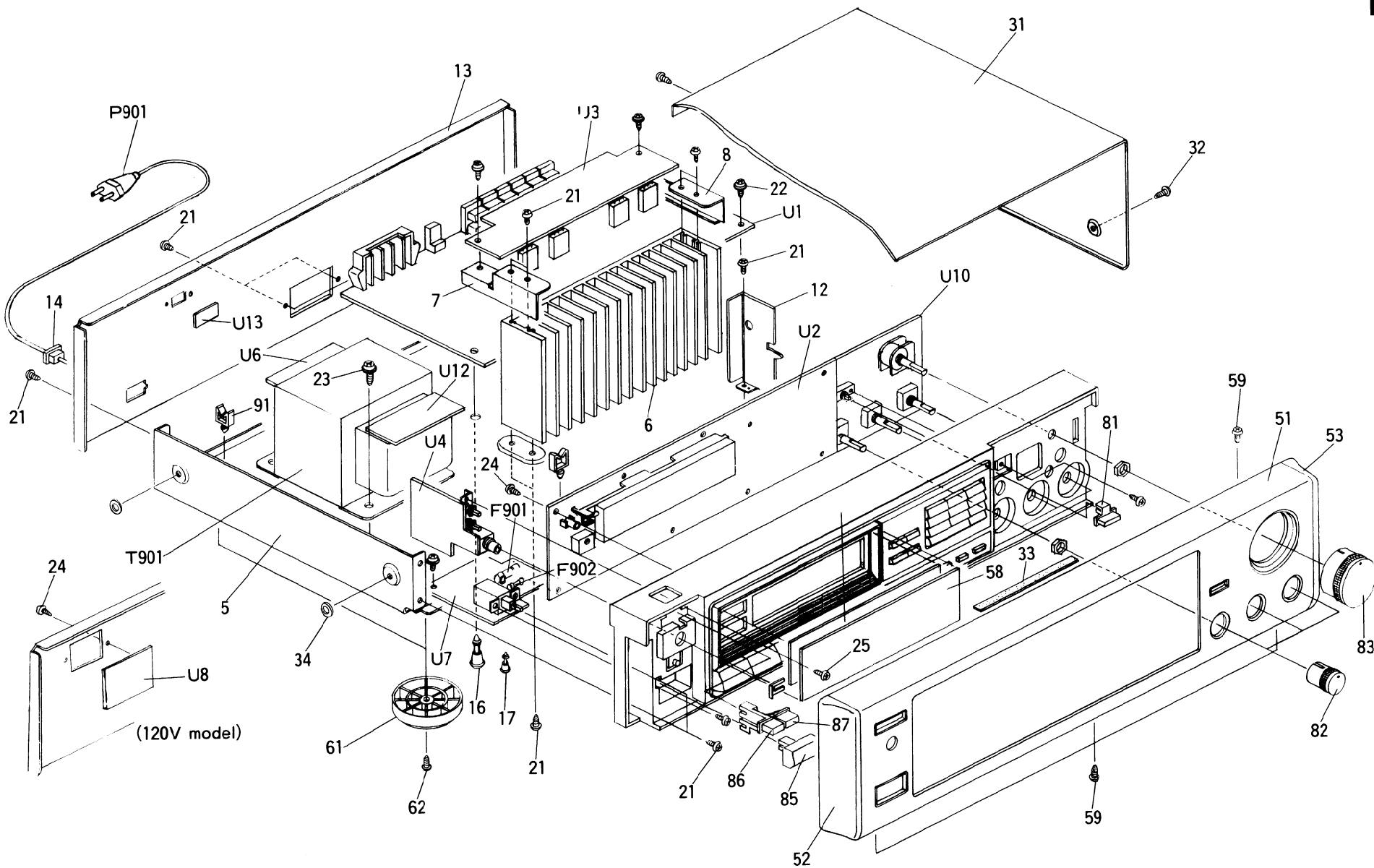
REF.NO.	PART NO.	DESCRIPTION
U3	1A331527-1	NAAF-4327-1,Power amplifier circuit pc board ass'y <D>
	1A331527-1A	NAAF-4327-1A,Power amplifier circuit pc board ass'y <P/W/Q>
U4	1A331528-1	NASW-4328-1,Headphone terminal pc board ass'y <D>
	1A331528-1A	NASW-4328-1A,Headphone terminal pc board ass'y <P/W/Q>
U5	1A331529-1	NASW-4329-1,Power switch pc board ass'y
U6	1A331530-1	NAETC-4330-1,Terminal pc board ass'y
U7	1A331531-1	NAPS-4331-1,Power supply circuit pc board ass'y <D>
	1A331531-1A	NAPS-4331-1A,Power supply circuit pc board ass'y <P>
	1A331531-1B	NAPS-4331-1B,Power supply circuit pc board ass'y <W>
	1A331531-1C	NAPS-4331-1C,Power supply circuit pc board ass'y <Q>
U8	1A331532-1	NAETC-4332-1,AC outlet pc board ass'y <D>
U9	1A331533-1	NAETC-4333-1,AC outlet pc board ass'y <P>
	1A331533-1A	NAETC-4333-1A,AC outlet pc board ass'y <W>
U10	1A331534-1	NAAF-4334-1,Tone control circuit pc board ass'y <D>
	1A331534-1A	NAAF-4334-1A,Tone control circuit pc board ass'y <P/W/Q>
U11	1A331535-1	NAETC-4335-1,Volume control pc board ass'y
U12	1A331537-1	NAETC-4337-1,Terminal pc board ass'y
U13	1A331538-1	NASW-4338-1,Voltage selector switch pc board ass'y <W>

NOTE: <B>:Black model only
<S>:Silver model only
<D>:120V model only
<P>:230V model only
<W>:Worldwide model only
<Q>:240V model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

EXPLODED VIEW

MODEL TX-901



PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	27110680Y	Front bracket <B>
	27110681Y	Front bracket <S>
4	28133255Y	Back plate
5	27100228Y	Chassis
6	27160290Y or	Radiator
	27160272AY	
7	27141441Y	Bracket LH
8	27141442Y	Bracket RH
12	27130643AY	Bracket,shield
13	27121536Y	Back panel <D>
	27121536-1Y	Back panel <P>
	27121536-3Y	Back panel <W>
	27121536-4Y	Back panel <Q>
14	27300750	⚠ Bushing
16	27190524	KGLS-14R,Holder
17	27190266	KGLS-12R,Holder
21	834430088	3TTS+8B(BC),Self-tapping screw
22	831130088	3TTW+8B,Self-tapping screw
23	830440089	4TTC+8C(BC),Self-tapping screw
24	833430080	3TTP+8P(BC),Self-tapping screw
25	82143006	3P+6FN(BC),Pan head screw
26	801433	3SMS10W.SW+14B(BC),Sems
		self-tapping screw
31	28184471AY	Top cover
32	834430088	3TTS+8B(BC),Self-tapping screw
33	28140680	0.5×180×8,Cushion
34	27270212	Spacer <P/W/Q>
51	1A335701K	Front panel ass'y <B>
	1A336701K	Front panel ass'y <S>
52	28125226BY	End cap L
53	28125227BY	End cap R
58	28191617Y	Clear plate
59	833430080	3TTP+8P(BC),Self-tapping screw
60	28135199	Badge
61	27175254	Leg
62	834430088	3TTS+8B(BC),Self-tapping screw
71	25060044	Terminal GND
81	28324162Y	Knob LOUD <B>
	28324177Y	Knob LOUD <S>
82	28324150-1Y	Knob LEV <B>
	28324151	Knob LEV <S>
83	28324181	Knob VOL <B>
	28324182	Knob VOL <S>

REF.NO.	PART NO.	DESCRIPTION
85	28324140	Knob POW <B>
	28324184	Knob POW <S>
86	28324170Y	Knob SP A <B>
	28324172Y	Knob SP A <S>
87	28324171Y	Knob SP B <B>
	28324173Y	Knob SP B <S>
91	27300833	WS-2NS,Clamp
F901	252049	⚠ 4A(ST-6),Fuse <D/W>
F902	252074	⚠ 2A-SE-EAK,Fuse <P/W/Q>
P901	253163Y or	⚠ AS-UC-6 #18,
	253174Y	⚠ Power supply cord <D>
	253164Y or	⚠ AS-CEE,
	253175Y	Power supply cord <P/W>
	253170	⚠ AS-SAA,Power supply cord <Q>
Q503,Q504	2202492,	2SA1264N-R,
	2202493,	2SA1264N-O,
	2202243,	2SA1694-O,
	2202244 or	2SA1694-Y or
	2202246	2SA1694-P,Power amplifier transistor
Q505,Q506	2202502,	2SC3181N-R,
	2202503,	2SC3181N-O,
	2202253,	2SC4467-O,
	2202254 or	2SC4467-Y or
	2202256	2SC4467-P,Power amplifier transistor
T901	2300757Y	⚠ NPT-1130D,Power transformer <D>
	2300758Y	⚠ NPT-1130P,Power transformer <P>
	2300759Y	⚠ NPT-1130DG,Power transformer <W>
	2300760Y	⚠ NPT-1130Q,Power transformer <Q>
U1	1A335525-2	NARF-4325-2,Tuner circuit pc board ass'y <D>
	1A335525-2A	NARF-4325-2A,Tuner circuit pc board ass'y <P/Q>
	1A335525-2B	NARF-4325-2B,Tuner circuit pc board ass'y <W>
U2	1A335526-2	NADIS-4326-2,Display circuit pc board ass'y <D>
	1A335526-2A	NADIS-4326-2A,Display circuit pc board ass'y <P/Q>
	1A335526-2B	NADIS-4326-2B,Display circuit pc board ass'y <W>
U3	1A335527-2	NAAF-4327-2,Power amplifier circuit pc board ass'y <D>
	1A335527-2A	NAAF-4327-2A,Power amplifier circuit pc board ass'y <P/W/Q>

REF.NO.	PART NO.	DESCRIPTION
U4	1A335528-2	NASW-4328-2,Headphone terminal pc board ass'y <D>
	1A335528-2A	NASW-4328-2A,Headphone terminal pc board ass'y <P/W/Q>
U6	1A335530-2	NAETC-4330-2,Terminal pc board ass'y
U7	1A335531-2	NAPS-4331-2,Power supply circuit pc board ass'y <D>
	1A335531-2A	NAPS-4331-2A,Power supply circuit pc board ass'y <P>
	1A335531-2B	NAPS-4331-2B,Power supply circuit pc board ass'y <W>
	1A335531-2C	NAPS-4331-2C,Power supply circuit pc board ass'y <Q>
U10	1A335536-1	NAAF-4336-1,Tone control circuit pc board ass'y <D>
	1A335536-1A	NAAF-4336-1A,Tone control circuit pc board ass'y <P/W/Q>
U12	1A335537-2	NAETC-4337-2,Terminal pc board ass'y
U13	1A335538-2	NASW-4338-2,Voltage selector switch pc board ass'y <W>

NOTE: <B>:Black model only
<S>:Silver model only
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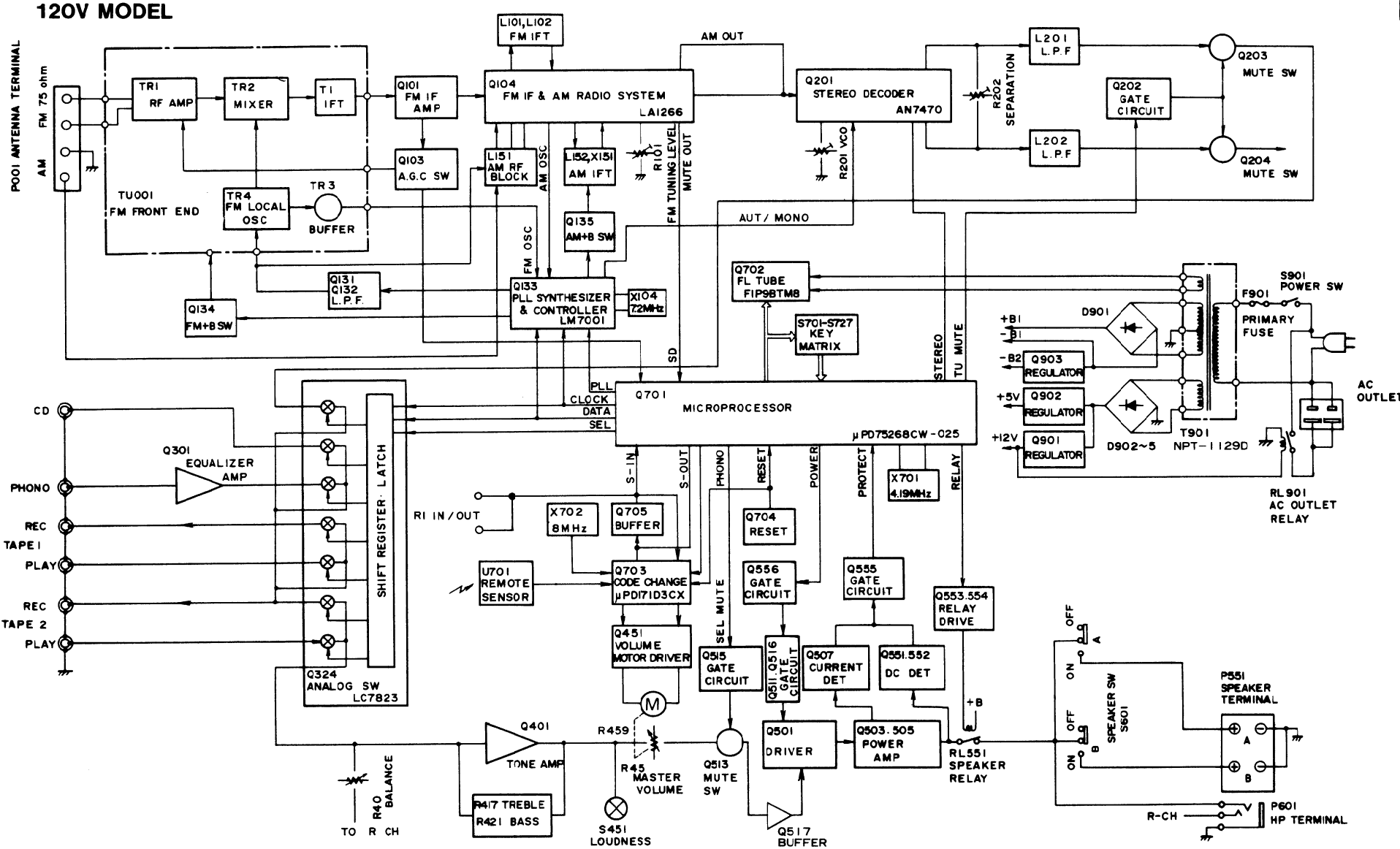
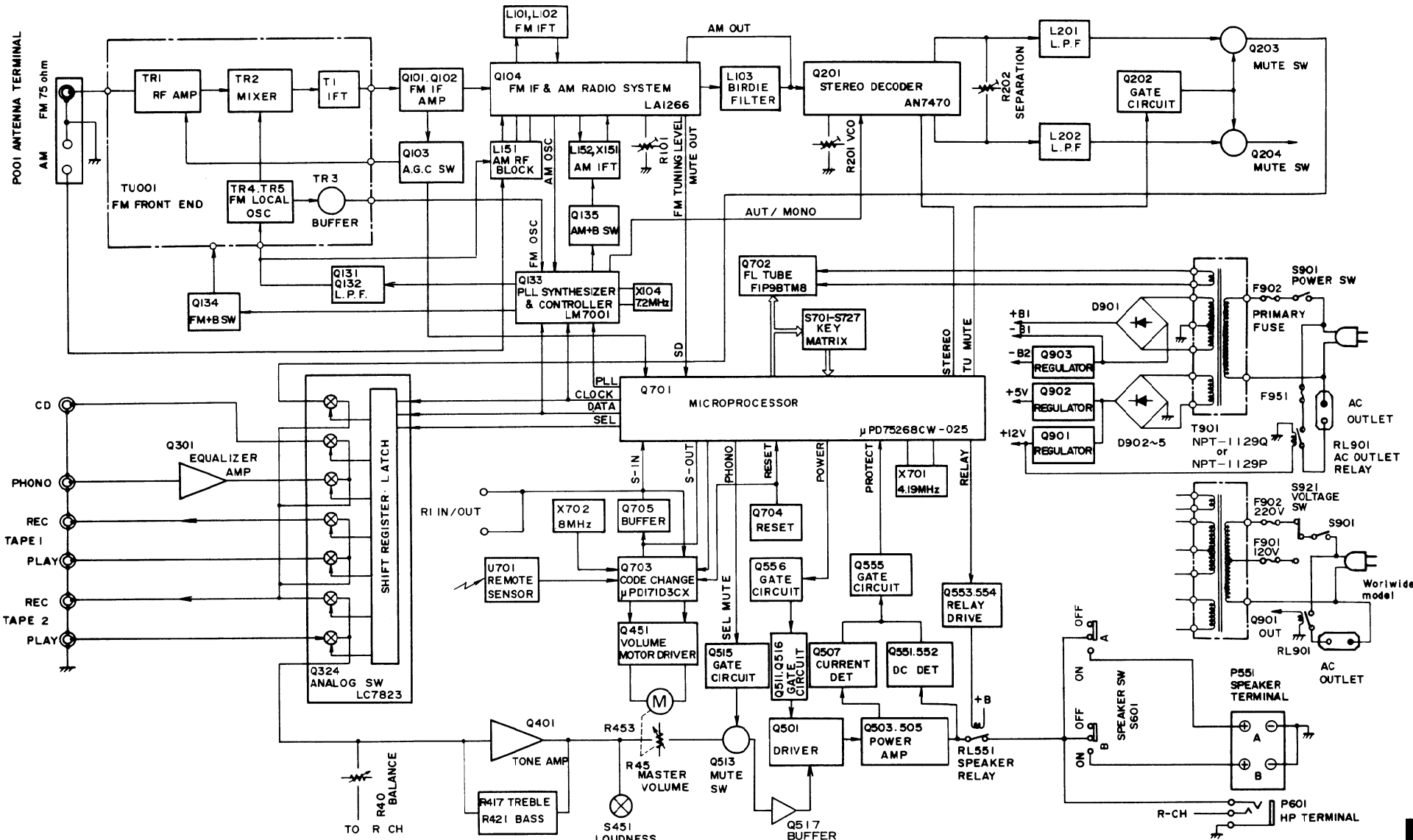
BLOCK DIAGRAM

MODEL TX-903
120V MODEL

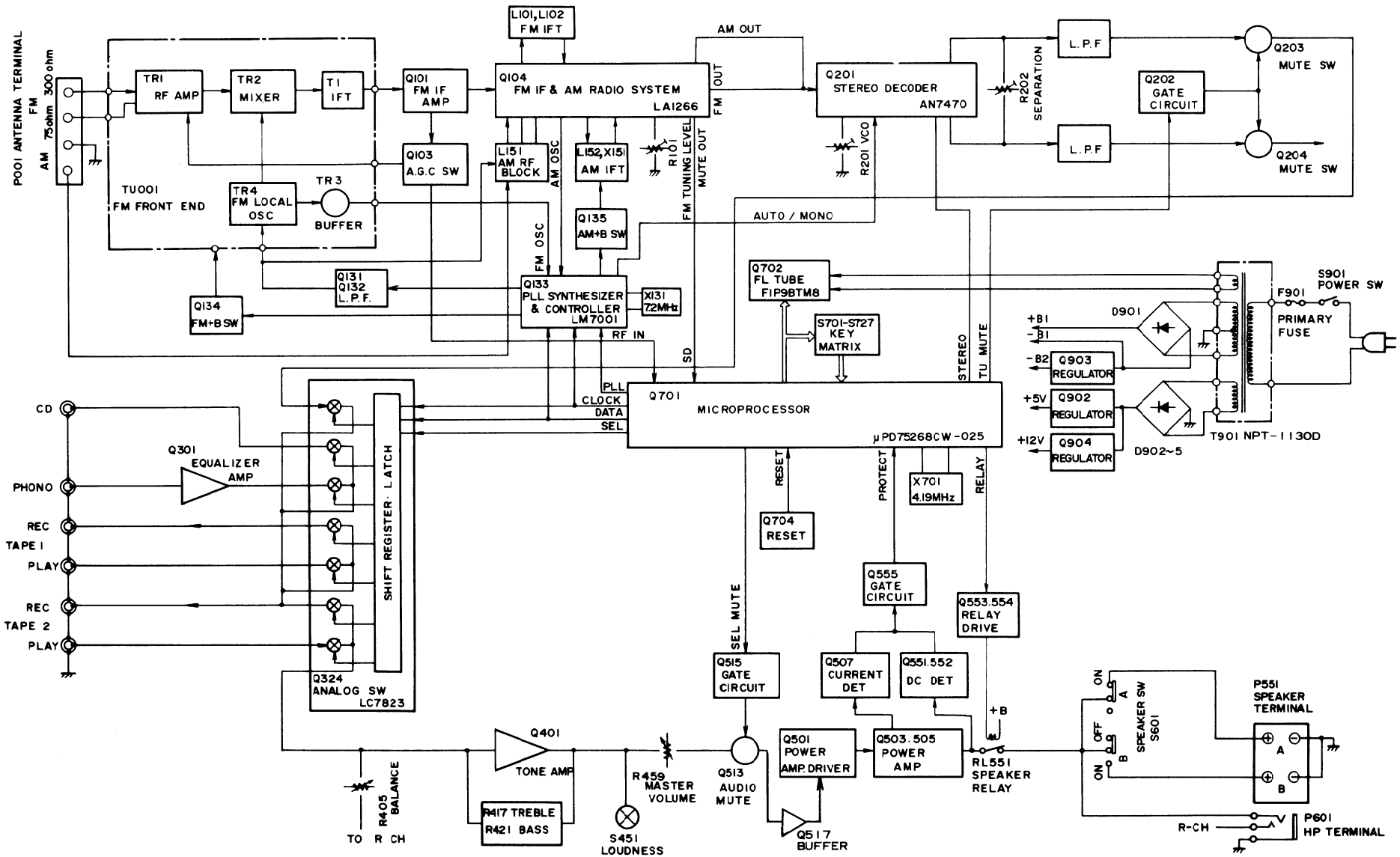


OTHER MODELS



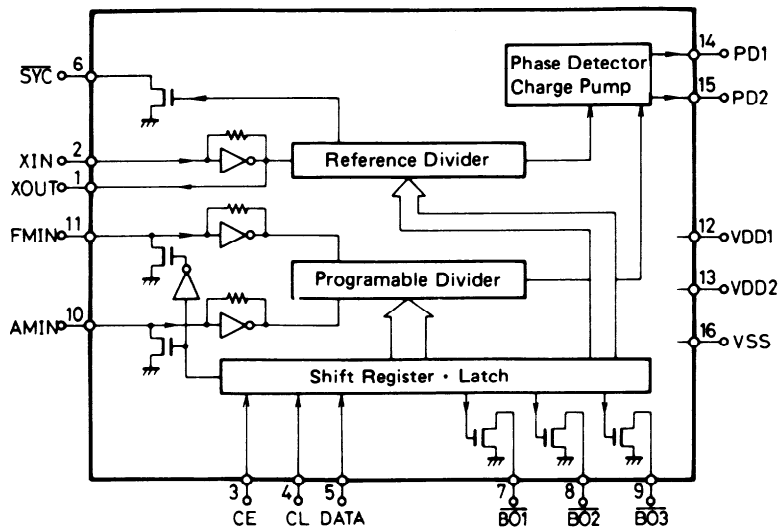
BLOCK DIAGRAM

MODEL TX-901
120V MODEL



IC BLOCK DIAGRAM AND DESCRIPTION

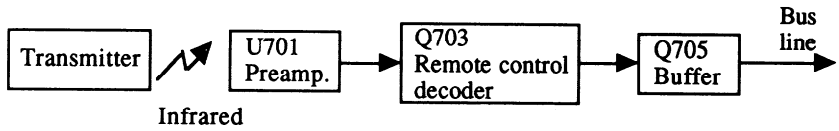
LM7001(PLL synthesizer and controller)

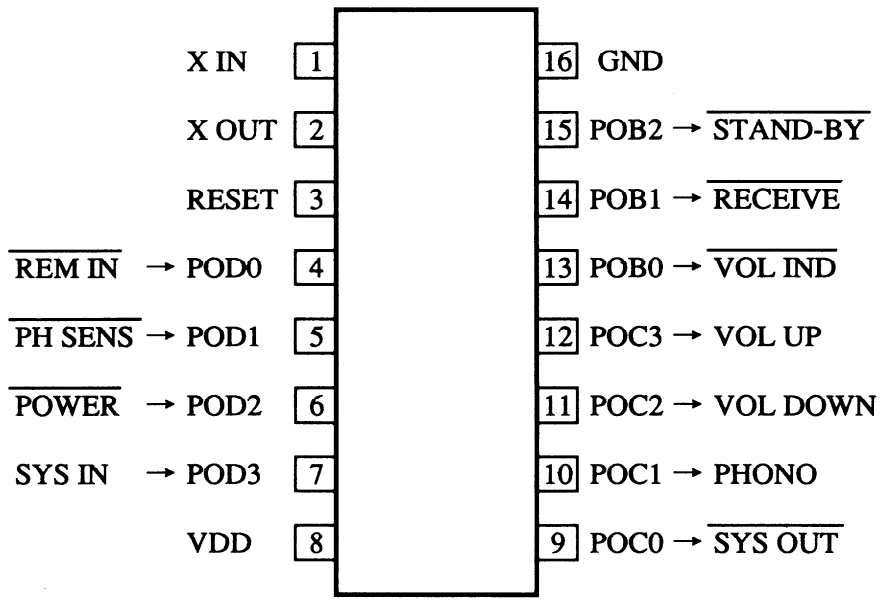


Pin No.	Terminal	Description
1	XOUT	Connect to the 7.2 MHz crystal oscillator.
2	XIN	
3	CE	Chip enable terminal. Connect to the PLL terminal of micro processor.
4	CL	Serial clock input terminal. Connect to the CLOCK terminal of micro processor.
5	DATA	Serial data input terminal. Connect to the DATA terminal of micro processor.
6	SYN	Not used.
7	AUTO/MONO	**Auto/Mono control output terminal. "H" when Auto.**
8	BO2	FM control signal output terminal. "L" when FM.
9	BO3	AM control signal output terminal. "L" when AM.
10	AMIN	AM local oscillator input terminal.
11	FMIN	FM local oscillator terminal.
12	VDD1	Power supply terminal for back-up.
13	VDD2	Power supply terminal.
14	PD1	Charge pump output of the phase detector which constitutes the PLL. High level is output when the divided local oscillator frequency is high than the reference frequency. In the opposite case, low level is output. Floating occurs when the frequencies matched. The output is applied to the variable capacitor diode in the local oscillator through the low pass filters.
15	PD2	
16	Vss	Ground terminal.

μPD17103CX-528(Remote control decoder)

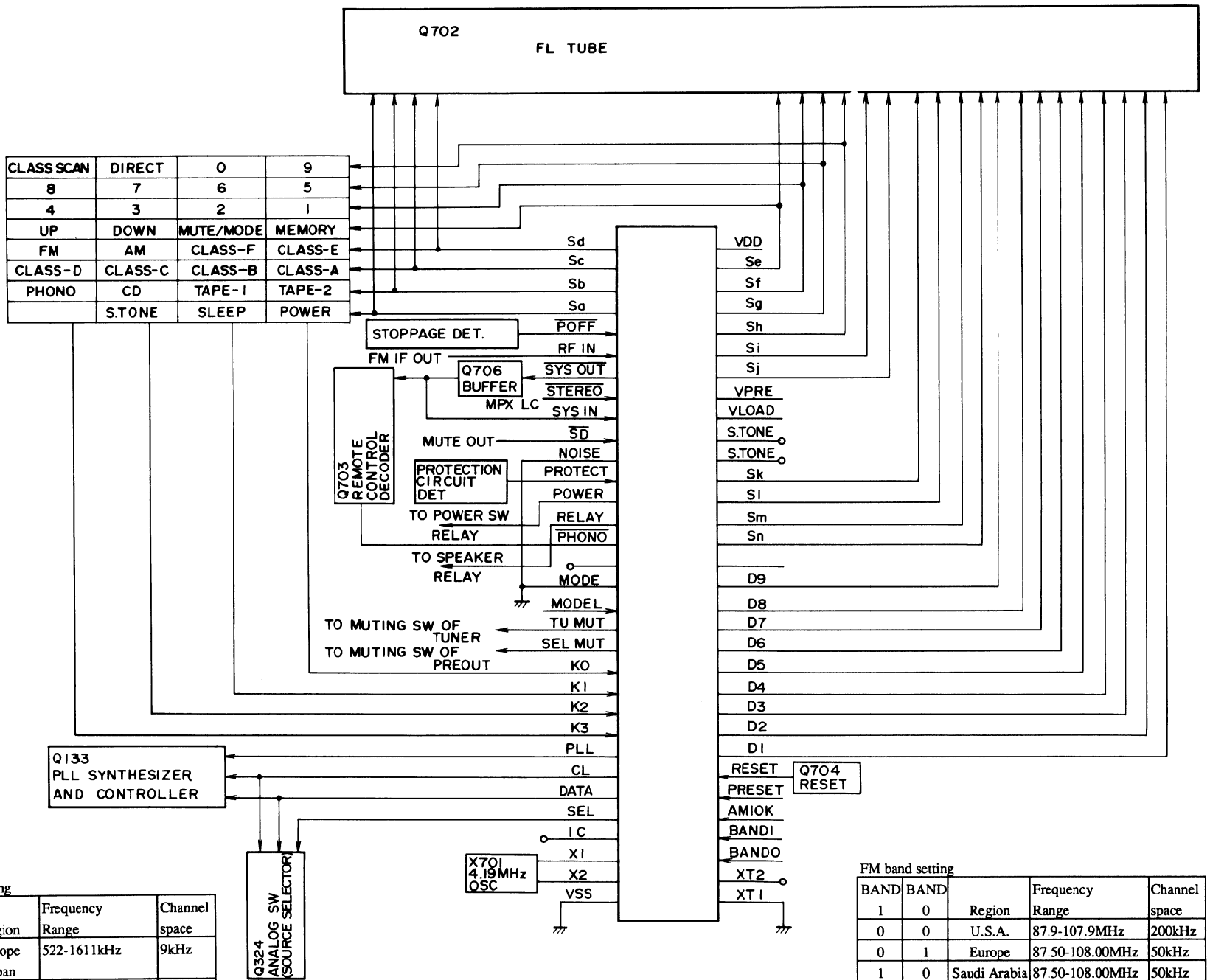
MODEL TX-903





Pin No.	Symbol	Terminal	Description
1	XIN	OSC	Connect to the 8.00MHz ceramic oscillator.
2	XOUT		
3	RES	RESET	System reset terminal. Active low.
4	POD0	REMOTE IN	Signal input terminal from preamp. for remote control. Active low.
5	POD1	PHONO SENES	Phono detection input terminal. Active low.
6	POD2	POWER	Stand-by detection input terminal. During low input, only the POWER code is decoded.
7	POD3	SYS IN	System code input terminal.
8	V_{DD}	+B	Power supply terminal.
9	POC0	SYS OUT	Output at this terminal are the custom code (16bits) remote control code input to REMOTE IN, data code (8bits), and the serial code (12bits) that has been converted corresponding to the decoded data code (8bits)
10	POC1	PHONO	When the player PLAY/REEJECT is input, a high pulse of 200ms is output.
11	POC2	VOL DOWN	When the volume DOWN code is input, a high pulse of 120ms is output.
12	POC3	VOL UP	When the volume UP code is input, a high pulse of 120ms is output.
13	POB0	VOL IND	During the output of VOLUME UP/DOWN, a pulse (⌋T⌊T⌋T⌊T = 250ms) is output. (Not used.)
14	POB1	$\overline{\text{RECEIVE}}$	This is the display output for remote control reception. Output is low when decoded code is being recieved.
15	POB2	STAND-BY	STAND-BY indication terminal.
16	V_{SS}	GND	Ground terminal.

μPD75268CW-025(Microprocessor)



AM band setting

AM 10K	Region	Frequency Range	Channel space
0	Europe Japan	522-1611kHz	9kHz
0*	Saudi Arabia	531-1602kHz	9kHz
1	U.S.A.	530-1710kHz	10kHz

FM band setting

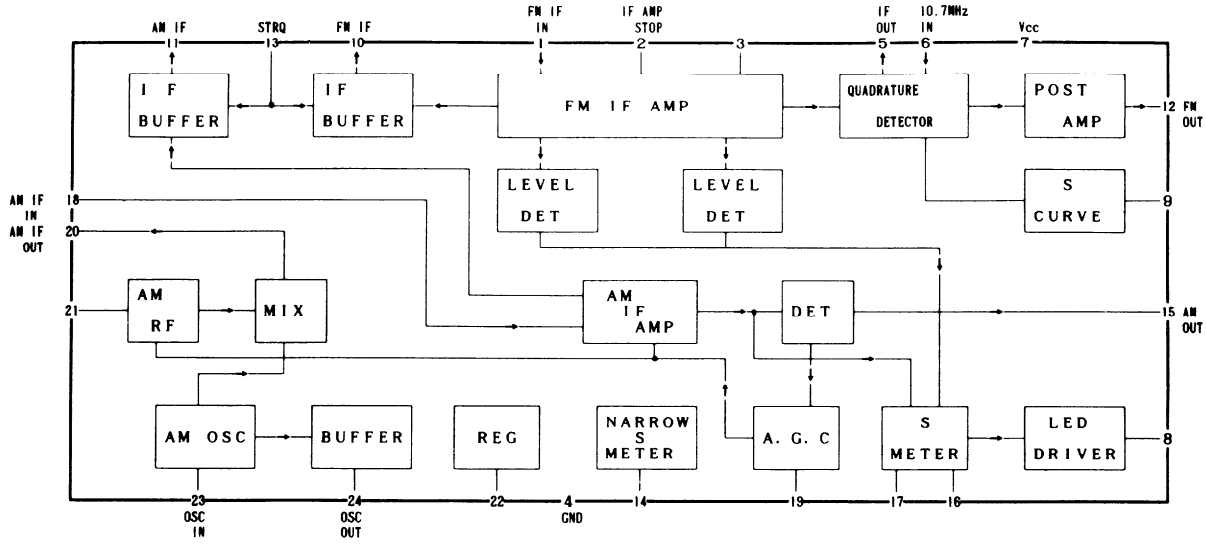
BAND	BAND		Frequency Range	Channel space
1	0	Region		
0	0	U.S.A.	87.9-107.9MHz	200kHz
0	1	Europe	87.50-108.00MHz	50kHz
1	0	Saudi Arabia	87.50-108.00MHz	50kHz
1	1	Japan	76.0-90.0MHz	100kHz

Pin No.	Symbol	Description
1	Sd	Segment and key scan output terminals. "H" when active.
2	Sc	
3	Sb	
4	Sa	
5	POFF	This is the input terminal for detection of the stoppage of electric current."L" when the stoppage of electric current.
6	RF IN	RF mode input terminal.
7	SYS OUT/ SYS EN	System code output terminal."L"when active. Initializing input terminal when the power turns on.
8	STEREO	Stereo broadcast detection input terminal. "L" when stereo broadcast.
9	SYS IN	System code input terminal."H" when active.
10	SD	Broadcast detection input terminal."L" when active. Control the stop of auto tuning and output TU MUT(#19).
11	NOISE	Noise detection input terminal.Not used.
12	PROTECT	Protection circuit operation detection input terminal.
13	POWER	Power control output terminal.
14	RELAY	Speaker relay control output terminal.
15	PHONO	Phono control output terminal.
16		Not used.
17	MODE	Initializing input terminal for operation mode setting.
18	MODEL	Initializing input terminal for model setting of receiver.
19	TU MUT	Muting output terminal."H" when active.
20	SEL MUT	Audio muting output terminal.Not used.
21	K0	Key scan input terminals. "H" when active.
22	K1	
23	K2	
24	K3	
25	PLL	Connect to the terminal CE of PLL IC (LM7001 Q133).
26	CL	Connect to the terminal CL of PLL IC and analogue switch.
27	DATA	Connect to the terminals DATA of PLL IC and analogue switch.
28	SEL	Analog switch control output terminal. Connect to the terminal SEL of analogue switch(LC7823 Q324)

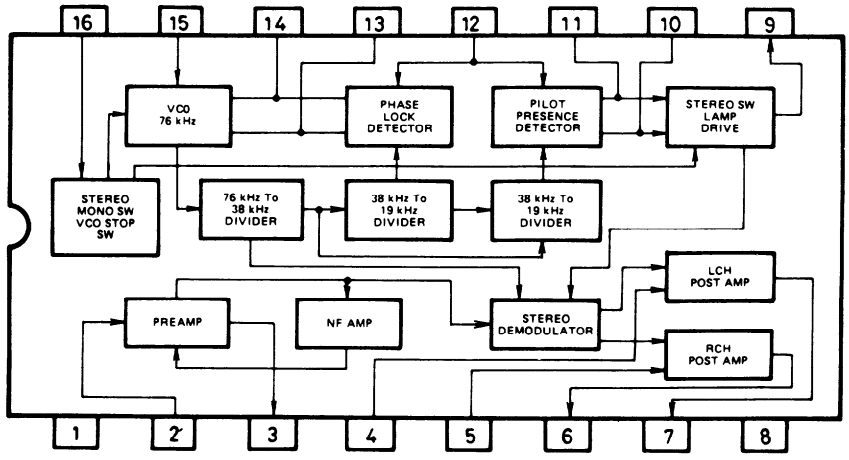
RF IN	RF MODE
L	LOCAL
H	DX

Pin No.	Function	Description
29	IC	Internal connected.
30	X1	Ceramic oscillator connection terminal for main system clock.
31	X2	Connect to the 4.19MHz ceramic oscillator.
32	VSS	Ground terminal.
33	XT1	Ceramic oscillator connection terminal for sub system clock.
34	XT2	Not used.
35	BAND0	Initializing input terminal for region setting of FM band.
36	BAND1	
37	AM 10K	Initializing input terminal for region setting of AM band.
38	PRESET	Initializing input terminal for operation mode setting.
39	RESET	Reset input terminal."L"when active.
40	D1	Digit output terminals."H" when active.
41	D2	
42	D3	
43	D4	
44	D5	
45	D6	
46	D7	
47	D8	
48	D9	
49		Not used.
50	Sn	Segment output terminals."H" when active.
51	Sm	
52	Sl	
53	Sk	
54	S.TONE	SELECTIVE TONE indication output terminal.Not used.
55	S.TONE	SELECTIVE TONE control output terminal.Not used.
56	VLOAD	Pull-down resistor connection terminal of FIP controller/driver.
57	VPRE	Power supply terminal of output buffer of FIP controller/driver.
58	Sj	Segment and key scan output terminals. "H" when active.
59	Si	
60	Sh	
61	Sg	
62	Sf	
63	Se	
64	VDD	Power supply terminal.(+5V)

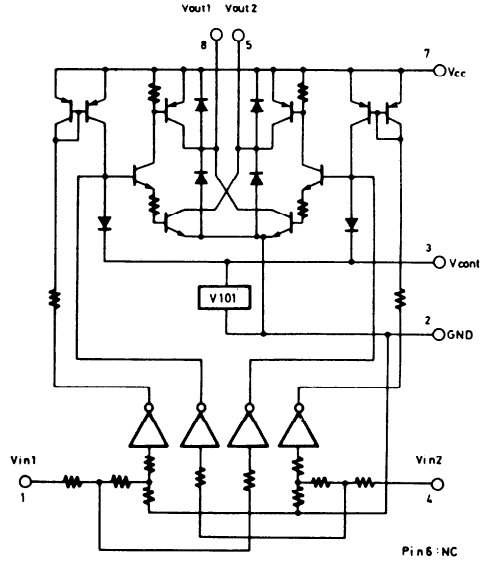
LA1266(FM IF and AM radio system)



AN7470(Stereo decoder)



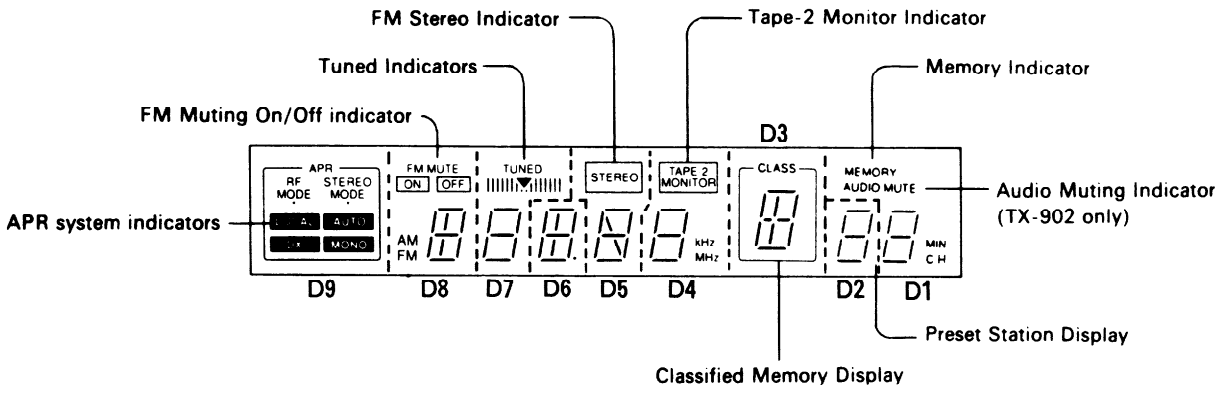
LB1630 (Motor driver)
(Only Model TX-903)



TRUTH TABLE

IN 1	IN 2	OUT 1	OUT 2	MOTOR
H	L	H	L	Normal
L	H	L	H	Reverse
H	H	OFF	OFF	Wait
L	L	OFF	OFF	Wait

FIP9BTM8(Fluorescent tube)

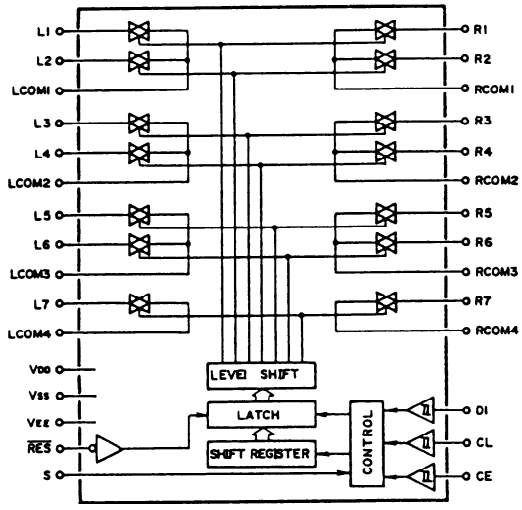


Terminal No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Electrode	F	F	NP	9G	NP	NP	NP	NP	NP	9G	NP	8G	NP	NP	8G	P(n)
Terminal No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Electrode	7G	7G	P(m)	6G	6G	P(l)	P(k)	5G	P(j)	P(i)	4G	P(h)	NP	4G	P(g)	
Terminal No.	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	
Electrode	3G	P(f)	P(e)	3G	P(a)	2G	2G	P(b)	1G	P(c)	P(d)	1G	NP	F	F	

Note: F:Filament
G:Grid
P:Anode
NP:No pin

	D9	D8	D7	D6	D5	D4	D3	D2	D1
Sa	APR	a	a	a	a	a	a	a	a
Sb	STEREO MODE	b	b	b	b	b	b	b	b
Sc	AUTO	c	c	c	c	c	c	c	c
Sd	MONO	d	d	d	d	d	d	d	d
Se	DX	e	e	e	e	e	e	e	e
Sf	LOCAL	f	f	f	f	f	f	f	f
Sg	RF MODE	g	g	g	g	g	g	g	g
Sh					h				
Si		i		i			i		
Sj		FM MUTE	TUNED		STEREO	TAPE-2	CLASS		MEMORY
Sk		ON	▼ (TUNED)				k		SLEEP
Sl		OFF							AUDIO MUTE
Sm		AM				kHz			MIN
Sn		FM				MHz			CH

LC7823/LC7823N(Analog switch)



Serial Data Composition

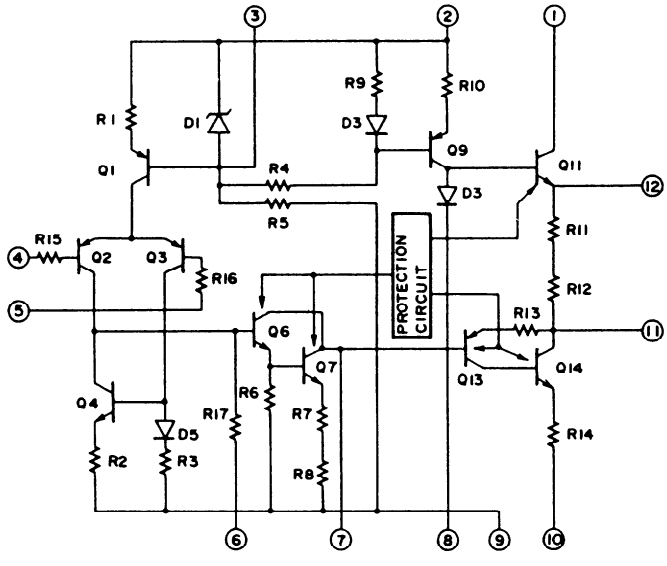
CIRCUIT NO	PART NAME	A0	A1	A2	A3	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
Q310	LC7823-N	0	1	1	1								
Q312	LC7821-N	1	1	0	1								
Q313	LC7823-N	1	1	1	1								
Q693	LC7822-N	0	0	1	1								
Q694	LC7822-N	1	0	1	1								

ADDRESS

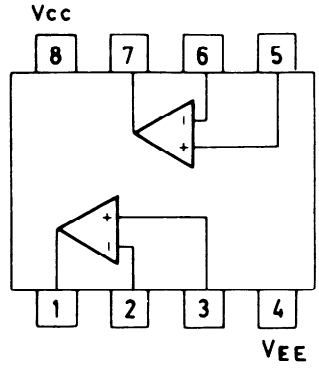
SWITCH CHANGEOVER

Pin No.	Terminal	Description
1,30	CD	On when the input selector is CD.
2,29	PHONO	On when the input selector is PHONO.
3,28	LCOM1,RCOM1	Common terminal.
4,27	TAPE-1 REC	Off when the input selector is TAPE-1.
5,26	TAPE-1 PB	On when the input selector is TAPE-1.
6,25	LCOM2,RCOM2	Common terminal.
7,24	TAPE-2 REC	Off when the input selector is TAPE-2.
8,23	TAPE-2 PB	On when the input selector is TAPE-2.
9,22	LCOM3,RCOM3	Common terminal.
10,21	TUNER	On when the input selector is TUNER.
11,20	LCOM4,RCOM4	Common terminal.
12	VEE	Negative power supply terminal.(-15V)
13	CE	Chip enable terminal.Connect to the terminal FUNC of the microprocessor.
14	DI	Serial data input terminal.Connect to the terminal DATA of the microprocessor.
15	CL	Serial clock terminal.Connect to the terminal CL of the microprocessor.
16	Vss	Ground terminal.
17	S	Select terminal.
18	RES	Reset terminal.
19	VDD	Power supply terminal.(+5V)

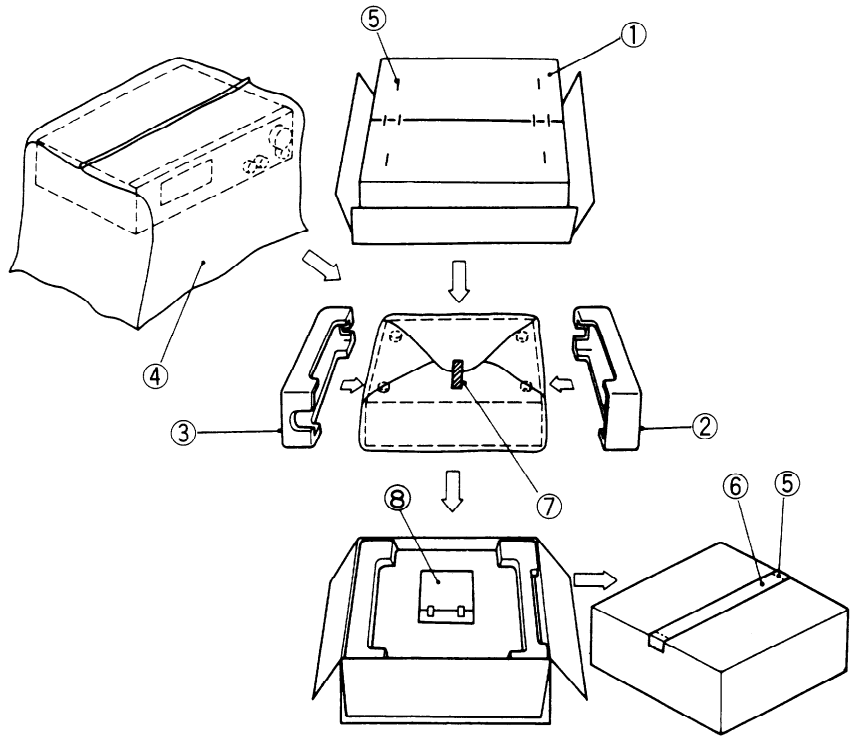
μPC1225H(Power amplifier driver)



NJM4558D-X (Operation amplifier)



PACKING VIEW



TX-903

REF.NO.	PART NO.	DESCIRPION
1	29052330Y	Master carton box <B>
	29052361Y	Master carton box <S>
2	29091440AY	Pad L
3	29091441AY	Pad R
4	29100034A	850×650,Styrene bag
5	282301	Sealing hook
6	29110071	Damplon tape
7	261504	Adhesive tape
8	Accessary bag ass'y	
	29341684AY	Instruction manual <D>
	29341686Y	Instruction manual <P/W/Q/C>
	29100097	350×250,Styrene bag
	292111Y	FM antenna <D/W>
	292112Y	FM antenna <P/Q>
	25065448Y	FM antenna adaptor <W/Q>
	232140	NMA-3057,AM loop antenna
	25055040	CV-K-2,Conversion plug <W>
	29365019A	Warranty card <N>
	29365024A	Warranty card <F>
	29100107	Styrene bag for warranty card <F>
	29358002J	Service station list<N>
	3010165Y	UM-3,Two batteries
	24140223Y	RC-223S,Remote control unit
	2010200	Cord RI

TX-901

REF.NO.	PART NO.	DESCIRPION
1	29052333Y	Master carton box <B>
	29052363Y	Master carton box <S>
2	29091440AY	Pad L
3	29091441AY	Pad R
4	29100034A	850×650,Styrene bag
5	282301	Sealing hook
6	29110071	Damplon tape
7	261504	Adhesive tape
8	Accessary bag ass'y	
	29341684AY	Instruction manual <D>
	29341686Y	Instruction manual <P/W/Q/C>
	29100097	350×250,Styrene bag
	292111Y	FM antenna <D/W>
	292112Y	FM antenna <P/Q>
	25065448Y	FM antenna adaptor <W/Q>
	232140	NMA-3057,AM loop antenna
	25055040	CV-K-2,Conversion plug <W>
	29365019A	Warranty card <N>
	29365024A	Warranty card <F>
	29100107	Styrene bag for warranty card <F>
	29358002J	Service station list<N>

NOTE: <B>:Black model only
<S>:Silver model only
<D>:120V model only
<P>:230V model only
<W>:Worldwide model only
<Q>:240V model only
<N>:U.S.A. model only
<F>:French model only
<C>:Canadian model only

ADJUSTMENT PROCEDURES

Preparation

1.Input

FM mono:1kHz,75kHz devi.,60dB/ μ V

FM stereo:1kHz,75kHz devi.,60dB/ μ V

Pilot signal 19kHz 7.5kHz devi.

AM:400Hz 30% mod.

2.Outputs

Connect the non-inductive type resistors of 8 ohms
to the speaker terminals A unless otherwise noted.

3.Standard Knob Position

VOLUME.....Maximum

BASS/TREBLE/BALANCE.....Center

MUTING/LOUDNESS.....Off

INPUT SELECTOR.....CD

SPEAKERS.....A

Confirming Operation

1.Protection circuit

a.Speaker relay

The speaker relay turns on after the power switch turned on for 5 minutes.

The speaker relay turns off immediately after the power switch turns off.

b. Over-voltage confirmation

The speaker relay is off immeditely after DC voltage $\pm$6V is applied to the terminal CD.

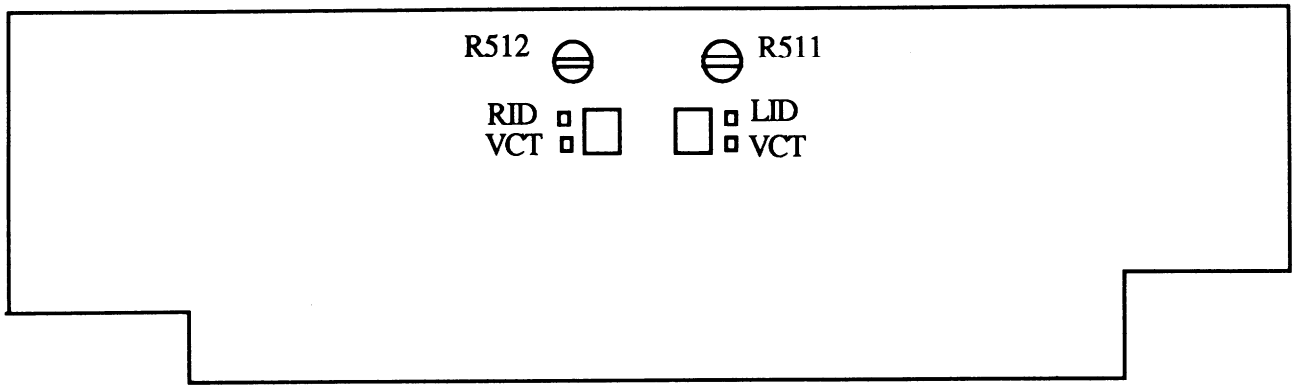
Amplifier section

Idling Current Adjustment

Connect the DC voltmeter to the terminals LID(RID) and CT on the power amplifier pc board.

Adjust the semi-fixed resistor R511(R512) so that the indication of voltmeter is 5$\pm$0.5mV.

Note:( ):Right channel



POWER AMPLIFIER PC BOARD

SOLDERING SIDE

PRINTED CIRCUIT BOARD-PARTS LIST

MODEL TX-903

TUNER CIRCUIT PC BOARD (NARF-4325-1/1A/1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end	
TU001	240084	TFFG2U122A<D>
	240085	TFFG4E122A<P/W>
	ICs	
Q104	22240039	LA1266
Q133	22240090	LM7001
Q201	22240242	AN7470
Q301	222502	NJM4558D-X
Q324	22240158 or	LC7823 or
	22240339	LC7823N
Q901	222780126Y	L78OS12
Q902	222780055	78M05HF
	Transistors	
Q101	2211723	2SC1923-O
Q102	2210746	2SC945A-P <P/W>
Q103,Q132	2211255	2SC1815-GR
Q131	2212445	2SK365-GR
Q134,Q135	2213510	DTA114ES
Q202,Q555	2211455	2SA1015-GR
Q203,Q204	2212285	2SC2878-A
Q551,Q552	2211255	2SC1815-GR
Q553,Q556	221281	DTC114YS
Q554	2211255	2SC1815-GR
Q903	2211455	2SA1015-GR
	Diodes	
D101,D102	223132	1K60
D103,D105	223163	1SS133
D131,D201	223163	1SS133
D551,D552	223163	1SS133
D553	224150512	05AZ5.1Y
D701	224150683	05AZ6.8Z
D901	22380038	RBV602
D902-D906	22380032	1SR139-100
D907,D908	224151203	05AZ12Z
D909	224152704	05AZ27R
D910	224150512	05AZ5.1Y
D911	223163	1SS133
	Coils	
L103	233383	NMC-6070 <P/W>
L104	233409M022	NCH-1272
L201,L202	233294	NMC-5040 <P/W>
L551,L552	231176	S-1.3C
	Transformers	
L101	233401	NFIF-4072
L102	233402	NFIF-4073
L152	232139	NMIF-4062
	RF block	
L151	232152	NMRF-7052

CIRCUIT NO.	PART NO.	DESCRIPTION
	Ceramic filters	
X101,X102	3010071	SFE10.7MA5 <D>
X101	3010081	SFE10.7MS3GYA <P/W>
X102	3010137	SFE10.7MMK <P/W>
X151	3010123	SFZ450JL
X152	3010076	BFU450C
	Crystal	
X131	3010158	XTL-7.2M
	Relay	
RL551	25065339	NRL-2P5ADC24-046
	Capacitors	
C001	354761009	10μF,35V,Elect.
C106	354784799	0.47μF,50V,Elect.
C107,C108	354742209	22μF,16V,Elect.
C112,C133	354780229	2.2μF,50V,Elect.
C113	354780109	1μF,50V,Elect.
C131	374722234	0.022μF±5%,50V,Plastic
C132,C159	374723334	0.033μF±5%,50V,Plastic
C134,C210	353782299	0.22μF,50V,Elect.
C138	354721019	100μF,6.3V,Elect.
C154,C554	354780479	4.7μF,50V,Elect.
C155	354741019	100μF,16V,Elect.
C156,C157	354761009	10μF,35V,Elect.
C160	374721034	0.01μF±5%,50V,Plastic
C161,C208	354780109	1μF,50V,Elect.
C201	354744719	470μF,16V,Elect.
C202	354742209	22μF,16V,Elect.
C204,C205	374721824	1800pF±5%,50V,Plastic
		<D>
	374721224	1200pF±5%,50V,Plastic
		<P/W>
C206	374724734	0.047μF±5%,50V,Plastic
C207	370134714	470pF±5%,100V,Plastic
C209	354780339	3.3μF,50V,Elect.
C212,C213	354761009	10μF,35V,Elect.
C215,C216	354780229	2.2μF,50V,Elect.
C217,C218	374723924	3900pF±5%,50V,Plastic
C219	354780229	2.2μF,50V,Elect.
C301,C302	354780229	2.2μF,50V,Elect.
C307,C308	354721019	100μF,6.3V,Elect.
C309,C310	374726224	6200pF±5%,50V,Plastic
C311,C312	374721824	1800pF±5%,50V,Plastic
C313,C314	354780229	2.2μF,50V,Elect.
C315,C316	354741019	100μF,16V,Elect.
C330	354780229	2.2μF,50V,Elect.
C551,C552	374724734	0.047μF±5%,50V,Plastic
C555	354722219	220μF,6.3V,Elect.
C563	354780479	0.47μF,50V,Elect.
C905,C906	3504207	6800μF,50V,Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C907,C908	354742219	220μF,16V,Elect.
C910	354783309	33μF,50V,Elect.
C911	354752229	2200μF,25V,Elect.
C913-C915	354761009	10μF,35V,Elect.
C917,C918	354781009	10μF,50V,Elect.
	Resistors	
R101	5210221 or	N06HR100KBD
	5210070	Semi-fixed
R201	5210216 or	N06HR5KBD or
	5210062	N06HR4.7KBD ,Semi-fixed
R202	5210222 or	N06HR200KBD or
	5210072	N06HR220KBD,Semi-fixed
R559,R560	442520824	8.2ohm,1/2W,Metal oxide film
R902,R903	441721024	1kohm,2W,Metal oxide film
R904	442520104	1ohm,1/2W,Metal oxide film
R905	441723904	39ohm,2W,Metal oxide film
R906	442521004	10ohm,1/2W,Metal oxide film
	Terminals	
P001	25060157Y	NTM-4PDML083,Antenna <D>
	25060117Y	NTM-2PDML051,Antenna <P/W>
P101	25060064	4P-5
P102	25060061	1P-5
P301,P302	25045323Y	NPJ-6PDBL180
P303	25045172	HSJ1003-01-020
P551	25060158Y	NTM-8PDML084,Speaker
	Sockets	
P310,P901	25050267	NSCT-3P95
	Radiators	
	27160145	RAD-51
	27160166	
	27160176	RAD-56

DISPLAY CIRCUIT PC BOARD (NADIS-4326-1/1A/1B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Remote sensor	
U701	24130003	GP1U50XS
	ICs	
Q701	22240406Y	μPD75268CW-025
Q703	22240376	μPD17103CX-528
	FL tube	
Q702	212093Y	FIP9BTM8
	Transistors	
Q704	221282	DTC144ES
Q705	2212600	DTA124ES
	Ceramic oscillators	
X701	3010163	CST4.19MGW
X702	3010154	CST8.00MT

CIRCUIT NO.	PART NO.	DESCRIPTION
	Diodes	
D702	224150913	05AZ9.1Z
D703	224150562	05AZ5.6Y
D704	225142	SEL2913K,L.E.D.
D705-D707	223163	1SS133
D709-D724	223163	1SS133
D726	223163	1SS133 <D>
	Coil	
L701	233400M220 or	NCH-2238 or
	233409K220	NCH-1284
	Capacitors	
C701	3000057	0.1F,5.5V,Super
C702,C704	375524744	0.47μF±5%,50V,Plastic
C703	353780229	2.2μF,50V,Elect.
C705	353744709	47μF,16V,Elect.
C706	353780109	1μF,50V,Elect.
	Resistor	
R710	49163103404	10kohm×4,1/10W,Array
	Switches	
S701-S727	25035548	NPS-111-S510
S728	25065286	NSS22112,Band <W>
	Holders	
	27190810Y	FL
	27190811Y	LED

POWER AMPLIFIER CIRCUIT PC BOARD(NAAF-4327-1/1A)

CIRCUIT NO.	PART NO.		DESCRIPTION
	ICs		
Q501,Q502	22240108		μPC1225H
Q517	222502		NJM4558D-X
	Transistors		
Q503,Q504	2202282,	*	2SA1265N-R,
	2202283,	*	2SA1265N-O,
	2201693	*	2SA1491-O,
	2201694 or	*	2SA1491-Y or
	2201696	*	2SA1491-P
Q505,Q506	2202292,	*	2SC3182N-R,
	2202293,	*	2SC3182N-O,
	2201703	*	2SC3855-O,
	2201704 or	*	2SC3855-Y or
	2201706	*	2SC3855-P
Q507-Q510	2211255		2SC1815-GR
Q511,Q512	2212600		DTA124ES
Q513,Q514	2212285		2SC2878-A
Q515	2211455		2SA1015-GR
Q516	221282		DTC144ES

CIRCUIT NO.	PART NO.		DESCRIPTION
	Capacitors		
C501,C502	354761009		10μF,35V,Elect.
C505,C506	354741019		100μF,16V,Elect.
C507,C508	374723334		0.033μF±5%,50V,Plastic
C515,C516	354780229		2.2μF,50V,Elect.
C517	353761009		10μF,35V,Elect.
C525-C528	354761009		10μF,35V,Elect.
	Resistors		
R511,R512	5215061		N08HR3KBC,Semi-fixed
R526,R527	442521004		10ohm,1/2W,Metal oxide film
R531-R534	4500005		0.22ohm,2W,Metal plate
	Radiators		
	27160306Y		
	Plugs		
P503,P504	25055495		NPLG-2P470

HEADPHONE TERMINAL PC BOARD(NASW-4328-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
S601	25035517	NPS-222-L479,Speaker switch
P601	25045255	YKB21-5009,Headphone terminal

POWER SWITCH PC BOARD (NASW-4329-1)

CIRCUIT NO.	PART NO.		DESCRIPTION
S751	25035548	⚠	NPS-111-S510,Push switch

POWER SUPPLY CIRCUIT PC BOARD(NAPS-4331-1/1A/1B/1C)

CIRCUIT NO.	PART NO.		DESCRIPTION
D920	223163		1SS133,Diode
S901	25035550	⚠	NPS-111-L512P,Push switch
RL901	25065269	⚠	NRL-1P5A-DC12-36,Relay <D>
	25065248	⚠	NRL-1P15A-DC12-29,Relay <P/W>
R901	431523355	⚠	3.3Mohm,1/2W,Solid resistor <D>
C901,C920	3500065A	⚠	DE7150FZ103PAC400V/125V
			IS capacitors
P902	25050267		NSCT-3P95,Socket
F901	252050	⚠	5A(ST-6),Fuse <D/W>
F902	252075	⚠	2.5A-SE-EAK,Fuse <P/W>
F901a	250113	⚠	SN5051,Fuseholder <D/W>
F902a	25050065	⚠	YSH-403T,Fuseholder <P/W>
	29360626-1		Fuse label <D>
	29360462		5A/125V,Fuse rating label <D/W>
	29360405		T2.5A,Fuse rating label <P/W>

AC OUTLET PC BOARD(NAETC-4332-1)
(Only 120V model)

CIRCUIT NO.	PART NO.		DESCRIPTION
P951	25050409	⚠	NSCT-4P234,AC outlet

AC OUTLET PC BOARD(NAETC-4333-1/1A)
(230V and Worldwide models)

CIRCUIT NO.	PART NO.		DESCRIPTION
F951	252074	⚠	2.2A-SE-EAK,Fuse <P>
F951a	25050065	⚠	YSH403T,Fuseholders <P>
P952	25050410	⚠	NSCT-2P235,AC outlet

TONE CONTROL CIRCUIT PC BOARD (NAAF-4334-1/1A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q401,Q402	222502	NJM4558D-X
	Capacitors	
C401,C402	354761009	10μF,35V,Elect.
C407,C408	354761009	10μF,35V,Elect.
C409,C410	374722234	0.022μF±5%,50V,Plastic
C411,C412	354780339	3.3μF,50V,Elect.
C413,C414	374722234	0.022μF±5%,50V,Plastic
C417,C418	354741019	100μF,16V,Elect.
	Resistors	
R405,R406	5104225	N11RGLC250KWT22Z,Balance
R417,R421	5104230	N14RLC100KWT22Z,Tone
R418,R422		

VOLUME CONTROL PC BOARD(NAETC-4335-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
Q451	22240322	LB1639,IC
C453,C454	374724734	0.047μF±5%,50V,Plastic capacitors
C473	354741019	100μF,16V,Elect. capacitor
R459,R460	5104243	N16RGM100KBTP25F,
		Volume,Variable resistor
P451	25050267	NSCT-3P95,Socket
P452	25050268	NSCT-4P96,Socket
S451	25035609	NPS-122-L571,Switch

VOLTAGE SELECTOR SWITCH PC BOARD (NASW-4338-1)
(Only Worldwide model)

CIRCUIT NO.	PART NO.		DESCRIPTION
S902	25065287	⚠	NSS-22113P,Slide switch

NOTE:<D>:Only 120V model
<P>:Only 230V and 240V models
<W>:Only Worldwide model

CAUTION:Replacement for transistor of mark *,if necessary, must be made from the same beta group (H_{FE}) as the original type.

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

PRINTED CIRCUIT BOARD-PARTS LIST

MODEL TX-901

TUNER CIRCUIT PC BOARD (NARF-4325-2/2A/2B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Front end	
TU001	240084	TFFG2U122A<D>
	240085	TFFG4E122A<P/W>
	ICs	
Q104	22240039	LA1266
Q133	22240090	LM7001
Q201	22240242	AN7470
Q301	222502	NJM4558D-X
Q324	→22240158 or	LC7823 or
	22240339	LC7823N
Q902	222780055	78M05HF
Q905	222780125	78M12HF
	Transistors	
Q101	2211723	2SC1923-O
Q102	2210746	2SC945A-P <P/W>
Q103,Q132	2211255	2SC1815-GR
Q131	2212445	2SK365-GR
Q134,Q135	2213510	DTA114ES
Q202,Q555	2211455	2SA1015-GR
Q203,Q204	2212285	2SC2878-A
Q551,Q552	2211255	2SC1815-GR
Q553	221281	DTC114YS
Q554	2211255	2SC1815-GR
Q903	2211455	2SA1015-GR
	Diodes	
D101,D102	223132	1K60
D103,D105	223163	1SS133
D131,D201	223163	1SS133
D551	223163	1SS133
D553	224150512	05AZ5.1Y
D701	224150683	05AZ6.8Z
D901	22380023	RBV401
D902-D906	22380032	1SR139-100
D907,D908	224151203	05AZ12Z
D909	224152704	05AZ27R
D910	224150512	05AZ5.1Y
D911	223163	1SS133
	Coils	
L103	233383	NMC-6070 <P/W>
L104	233409M022	NCH-1272
L201,L202	233294	NMC-5040 <P/W>
L551,L552	231176	S-1.3C
	Transformers	
L101	233401	NFIF-4072
L102	233402	NFIF-4073
L152	232139	NMIF-4062
	RF block	
L151	232152	NMRF-7052

CIRCUIT NO.	PART NO.	DESCRIPTION
	Ceramic filters	
X101,X102	3010071	SFE10.7MA5 <D>
X101	3010081	SFE10.7MS3GYA <P/W>
X102	3010137	SFE10.7MMK <P/W>
X151	3010123	SFZ450JL
X152	3010076	BFU450C
	Crystal	
X131	3010158	XTL-7.2M
	Relay	
RL551	25065339	NRL-2P5ADC24-046
	Capacitors	
C001	354761009	10μF,35V,Elect.
C106	354784799	0.47μF,50V,Elect.
C107	354742209	22μF,16V,Elect.
C108	354741019	100μF,16V,Elect.
C112,C133	354780229	2.2μF,50V,Elect.
C113	354780109	1μF,50V,Elect.
C131	374722234	0.022μF±5%,50V,Plastic
C132,C159	374723334	0.033μF±5%,50V,Plastic
C134,C210	353782299	0.22μF,50V,Elect.
C138	354721019	100μF,6.3V,Elect.
C154,C554	354780479	4.7μF,50V,Elect.
C155	354741019	100μF,16V,Elect.
C156,C157	354761009	10μF,35V,Elect.
C160	374721034	0.01μF±5%,50V,Plastic
C161,C208	354780109	1μF,50V,Elect.
C201	354744719	470μF,16V,Elect.
C202	354742209	22μF,16V,Elect.
C204,C205	374721824	1800pF±5%,50V,Plastic <D>
	374721224	1200pF±5%,50V,Plastic <P/W>
C206	374724734	0.047μF±5%,50V,Plastic
C207	370134714	470pF±5%,100V,Plastic
C209	354780339	3.3μF,50V,Elect.
C212,C213	354761009	10μF,35V,Elect.
C215,C216	354780229	2.2μF,50V,Elect.
C217,C218	374723924	3900pF±5%,50V,Plastic
C219	354780229	2.2μF,50V,Elect.
C301,C302	354780229	2.2μF,50V,Elect.
C307,C308	354721019	100μF,6.3V,Elect.
C309,C310	374726224	6200pF±5%,50V,Plastic
C311,C312	374721824	1800pF±5%,50V,Plastic
C313,C314	354780229	2.2μF,50V,Elect.
C315,C316	354741019	100μF,16V,Elect.
C330	354780229	2.2μF,50V,Elect.
C551,C552	374724734	0.047μF±5%,50V,Plastic
C555	354722219	220μF,6.3V,Elect.
C905,C906	3504207	6800μF,50V,Elect.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C907,C908	354742219	220μF,16V,Elect.
C910	354783309	33μF,50V,Elect.
C911	354752229	2200μF,25V,Elect.
C913-C915	354761009	10μF,35V,Elect.
C917,C918	354781009	10μF,50V,Elect.
	Resistors	
R101	5210221 or	N06HR100KBD
	5210070	Semi-fixed
R201	5210216 or	N06HR5KBD or
	5210062	N06HR4.7KBD ,Semi-fixed
R202	5210222 or	N06HR200KBD or
	5210072	N06HR220KBD,Semi-fixed
R559,R560	442520824	8.2ohm,1/2W,Metal oxide film
R902,R903	441729114	910ohm,2W,Metal oxide film
R904	442520104	1ohm,1/2W,Metal oxide film
R905	441726804	68ohm,2W,Metal oxide film
R906	442521004	10ohm,1/2W,Metal oxide film
R910	441622704	27ohm,1W,Metal oxide film
	Terminals	
P001	25060157Y	NTM-4PDML083,Antenna <D>
	25060117Y	NTM-2PDML051,Antenna <P/W>
P101	25060064	4P-5
P102	25060061	1P-5
P301,P302	25045323Y	NPJ-6PDBL180
P551	25060158Y	NTM-8PDML084,Speaker
	Sockets	
P310,P901	25050267	NSCT-3P95

DISPLAY CIRCUIT PC BOARD (NADIS-4326-2/2A/2B)

CIRCUIT NO.	PART NO.	DESCRIPTION
	IC	
Q701	22240406Y	μPD75268CW-025
	FL tube	
Q702	212093Y	FIP9BTM8
	Transistor	
Q704	221282	DTC144ES
	Ceramic oscillator	
X701	3010163	CST4.19MGW
	Diodes	
D702	224150913	05AZ9.1Z
D705-D707	223163	1SS133
D709-D711	223163	1SS133
D713-D720	223163	1SS133
	Coil	
L701	233400M220 or	NCH-2238 or
	233409K220	NCH-1284

CAUTION:Replacement for transistor of mark *,if necessary, must be made from the same beta group (H_{FE}) as the original type.

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitors	
C701	3000057	0.1F,5.5V,Super
C702,C704	375524744	0.47μF±5%,50V,Plastic
C703	353780229	2.2μF,50V,Elect.
	Resistor	
R710	49163103404	10kohm×4,1/10W,Array
	Switches	
S701-S727	25035548	NPS-111-S510
S728	25065286	NSS22112,Band <W>
	Holder	
	27190810Y	FL

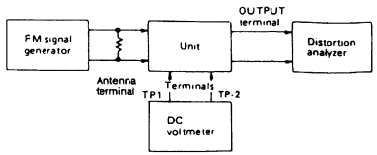
POWER AMPLIFIER CIRCUIT PC BOARD(NAAF-4327-2/2A)

CIRCUIT NO.	PART NO.		DESCRIPTION
	ICs		
Q501,Q502	22240108		μPC1225H
Q517	222502		NJM4558D-X
	Transistors		
Q503,Q504	2202492,	*	2SA1264N-R,
	2202493,	*	2SA1264N-O,
	2202243	*	2SA1694-O,
	2202244 or	*	2SA1694-Y or
	2202246	*	2SA1694-P
Q505,Q506	2202502,	*	2SC3181N-R,
	2202503,	*	2SC3181N-O,
	2202253	*	2SC4467-O,
	2202254 or	*	2SC4467-Y or
	2202256	*	2SC4467-P
Q507-Q510	2211255		2SC1815-GR
Q513,Q514	2212285		2SC2878-A
Q515	2211455		2SA1015-GR
	Capacitors		
C501,C502	354761009		10μF,35V,Elect.
C505,C506	354741019		100μF,16V,Elect.
C507,C508	374723334		0.033μF±5%,50V,Plastic
C515,C516	354780229		2.2μF,50V,Elect.
C517	353761009		10μF,35V,Elect.
C525-C528	354761009		10μF,35V,Elect.
	Resistors		
R511,R512	5215061		N08HR3KBC,Semi-fixed
R526,R527	442521004		10ohm,1/2W,Metal oxide film
R531-R534	4500005		0.22ohm,2W,Metal plate
	Radiators		
	27160273Y		
	Plugs		
P503,P504	25055495		NPLG-2P470

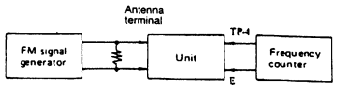
NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

FM section

Item	Step	Connection of instrument	FM SG output	Stereo modulator output	Tuned frequency	Output indicator	Adjustment point	Adjust for	Remarks
I F	1	Fig. 1	99.1MHz 1kHz,75kHz devi. 65dBf(60dB)	———	99.1MHz	DC voltmeter	L101	0±20mV	Set the FM mode switch to MONO. Repeat the steps 1 and 2 util no further adjustment in necessary.
	2					Distortion analyzer	L102	Minimum	
V C O		Fig. 2	99.1MHz 1kHz,75kHz devi. 65dBf(60dB)	———	99.1MHz	Frequency counter	R201	19kHz±10Hz	Set the FM mode switch to AUTO.
Stereo distortion		Fig.3	99.1MHz Ext. modulation 65dBf(60dB)	L+R 1kHz 67.5kHz devi.	99.1MHz	Distortion analyzer	IF on front end	Minimum	
Stereo separation	1	Fig.3	99.1MHz Ext.. modulation 65dBf(60dB)	Lch. 1kHz	99.1MHz	Rch. AC voltmeter	R202	Minimum	Maximum and same separation
	2			Rch. 1kHz		Lch. AC voltmeter		Minimum	
Tuned indicator level	1	Fig. 3	99.1MHz 1kHz, 75kHz devi. 19.2dBf(14dB)(120V model) 12dB (other models)		99.1MHz	TUNED indicator	R101	Light on	
	2		99.1MHz 1kHz, 75kHz devi. 18.2dBf(13dB) 11dB (other models)					Light off	

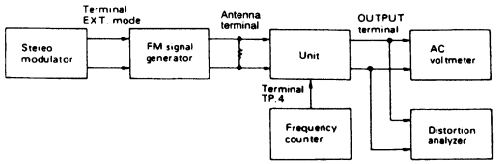


〈Fig. 1〉



Use the high impedance probe. (10:1)

〈Fig. 2〉

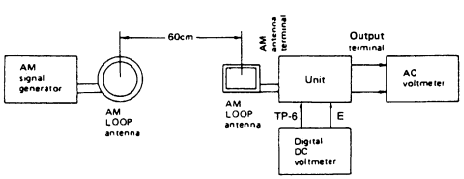


〈Fig.3〉

AM section

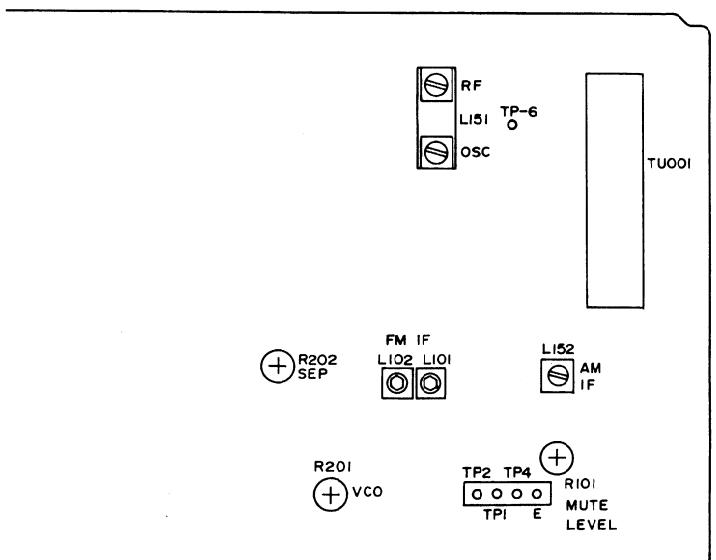
Step	AM SG output	Tuned Frequency	Output indicator	Adjustment point	Adjust for
1	———	522kHz (530kHz) 〈531kHz〉	Digital DC voltmeter	OSC coil on RF block (L151)	1.5V±0.1V
2	603kHz,60dB/m (600kHz) 400Hz 30% mod.	603kHz (600kHz)	A C voltmeter	RF coil on RF block (L151)	Maximum
3	990kHz, 60dB/m 400Hz 30% mod.	990kHz	A C voltmeter	L152	Maximum

Note: ( )120V model 〈10kHz step〉
〈 〉: Worldwide model



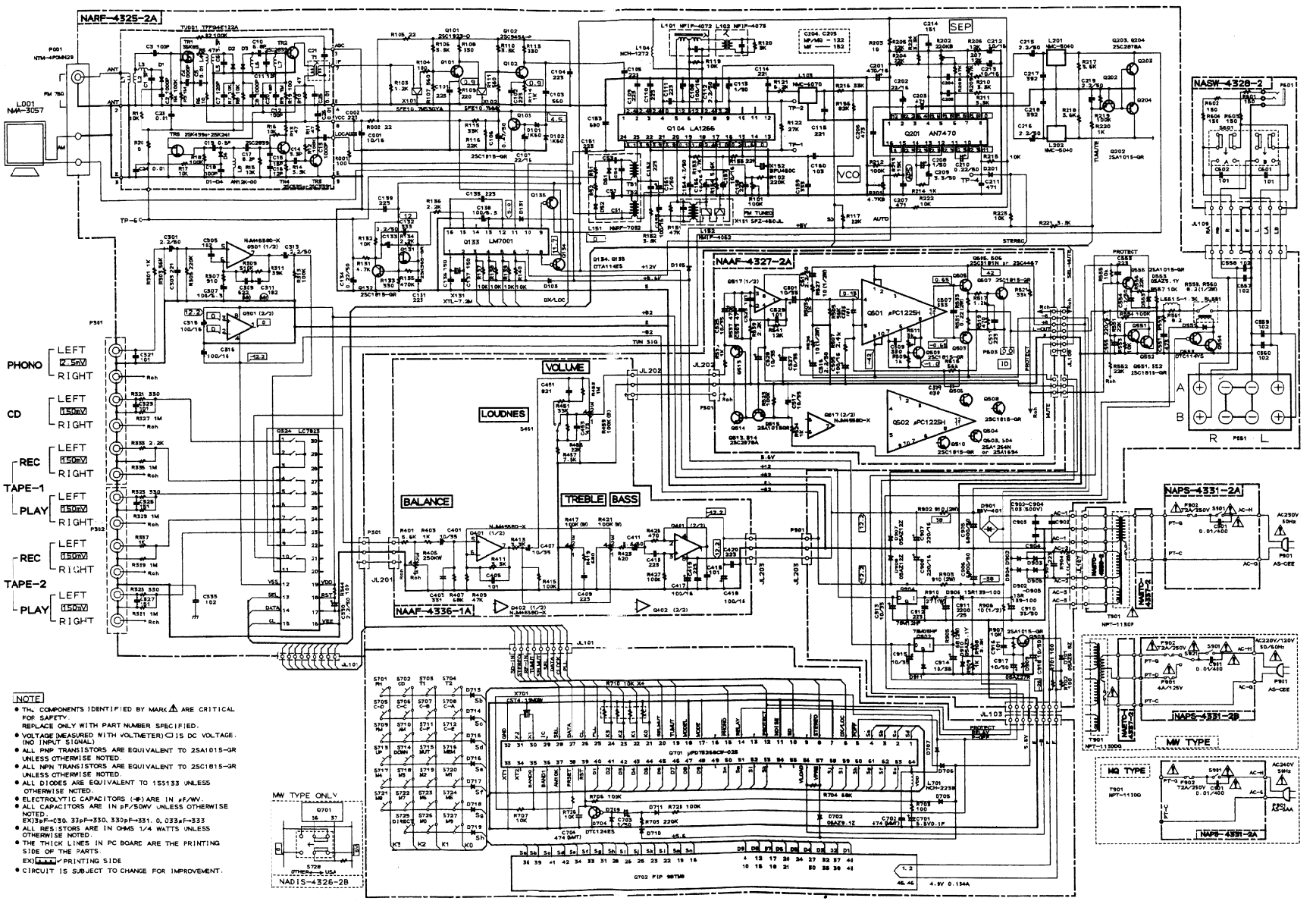
Reference specifications

Tuned voltage (Connet Digital DC voltmeter to test point TP-6)	AM	530kHz (U.S.A. model)	1.5 ±0.4V
		522kHz (European model)	1.5 ±0.4V
		1710kHz (U.S.A. model)	8.0 ±0.5V
		1611kHz (European model)	7.5 ±0.5V
	FM	87.9MHz (U.S.A. model)	2.0 ±0.5V
		87.50MHz (European model)	2.0 ±0.5V
		107.9MHz (U.S.A. model)	7.5 ±0.5V
		108.0MHz (European model)	7.5 ±0.5V
Muting width	35 ± 10kHz		
Muting level	(U.S.A. model)	FM 14 ± 3dB	
	(European model)	FM 12 ± 3dB	
Auto stop level		AM Less than 68dB/m FM Less than 20dBμ	



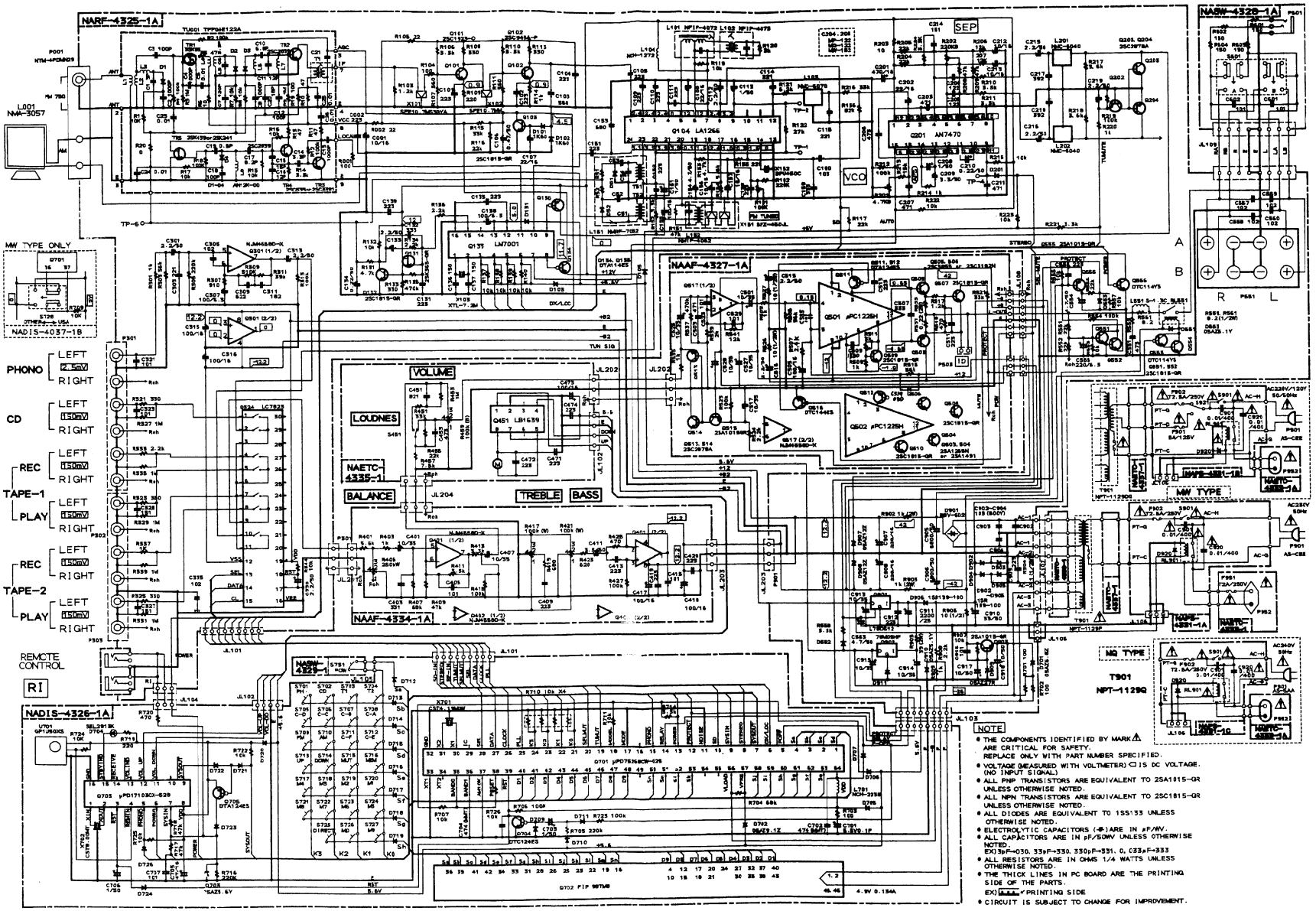
SCHEMATIC DIAGRAM

MODEL TX-901 (Other models)


NARF-4325-2A
NAAF-4327-2A
NASW-4328-2
NAAF-4336-1A
NAPS-4331-2A
NAPS-4331-2B
MW TYPE
MQ TYPE
NADIS-4326-2B
PHONO
CD
REC
TAPE-1
PLAY
TAPE-2
VOLUME
LOUDNESS
BALANCE
TREBLE
BASS
SEP
VCO
NOTE
• THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
• VOLTAGE (MEASURED WITH VOLTMETER) CIS DC VOLTAGE. (NO INPUT SIGNAL)
• ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
• ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
• ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
• ELECTROLYTIC CAPACITORS (-⊕-) ARE IN μF/WV.
• ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED. EX)3pF=C3D, 33pF=330, 330pF=331, 0.033μF=333
• ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
• THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS. EX) PRINTING SIDE
• CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

SCHEMATIC DIAGRAM

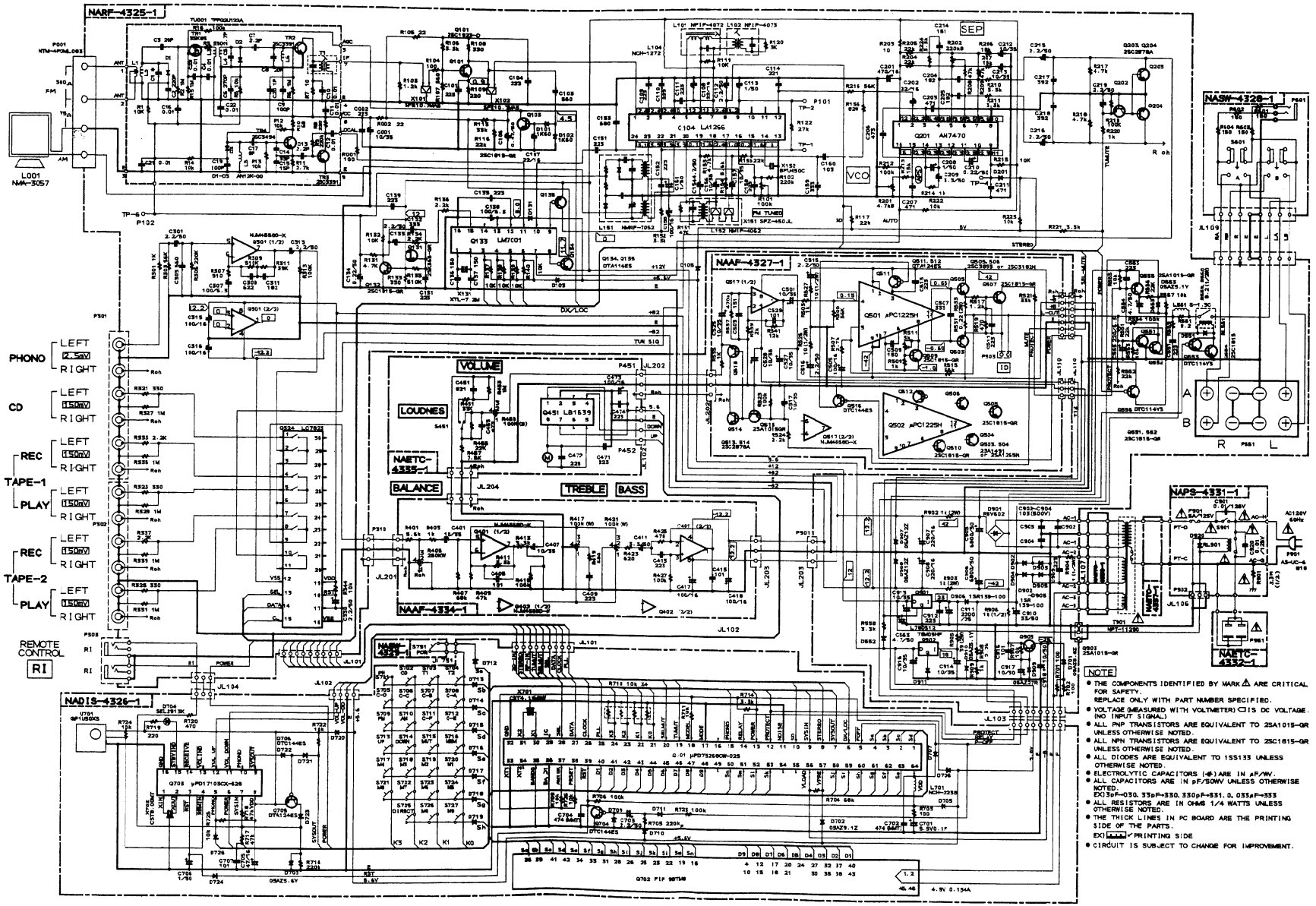
MODEL TX-903 (Other models)



ONKYO CORPORATION

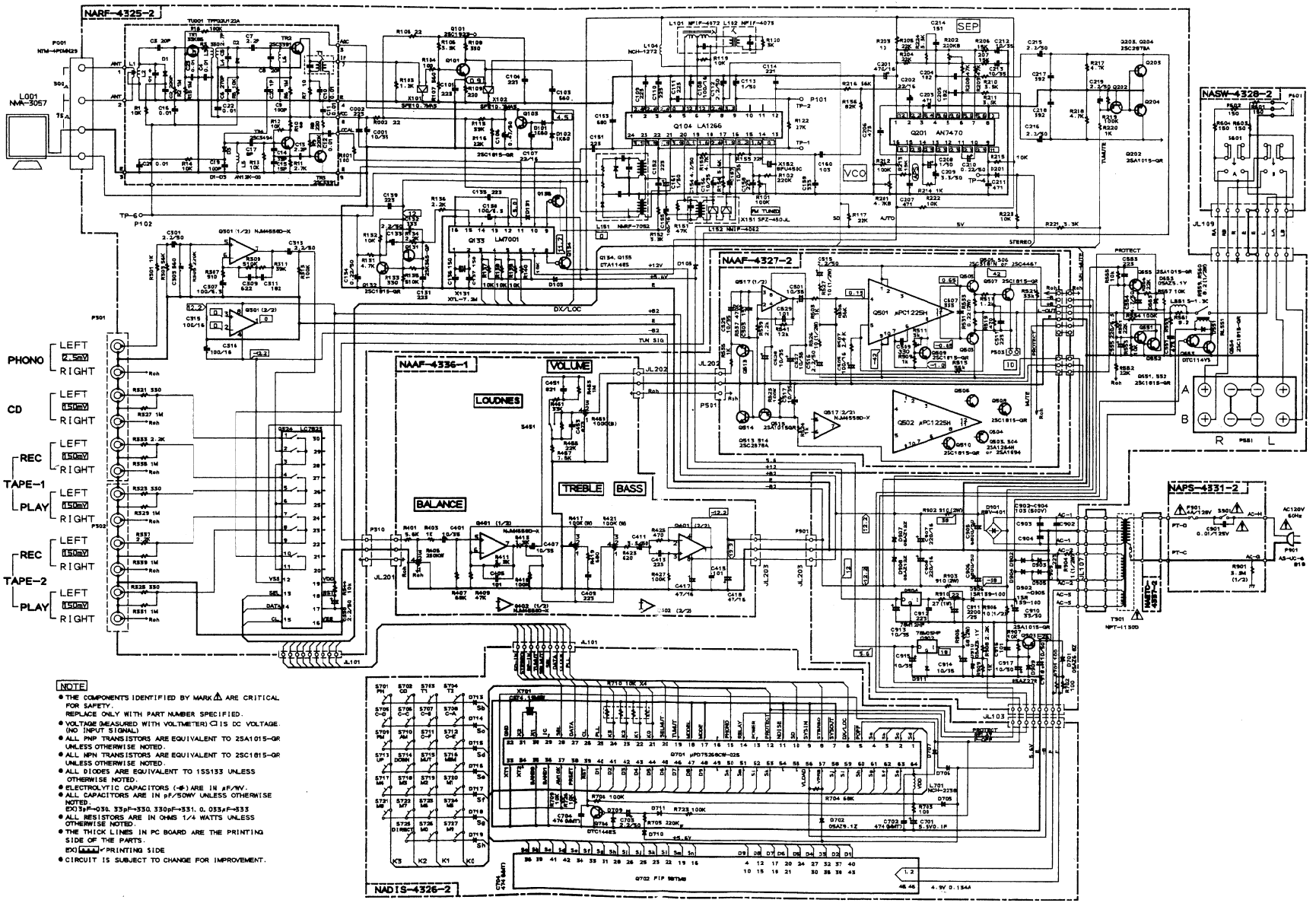
SCHEMATIC DIAGRAM

MODEL TX-903 (120V model)



SCHEMATIC DIAGRAM

MODEL TX-901 (120V model)



HEADPHONE TERMINAL PC BOARD(NASW-4328-2/2A)

CIRCUIT NO.	PART NO.	DESCRIPTION
S601	25035517	NPS-222-L479,Speaker switch
P601	25045255	YKB21-5009,Headphone terminal

POWER SUPPLY CIRCUIT PC BOARD(NAPS-4331-2/2A/2B/2C)

CIRCUIT NO.	PART NO.		DESCRIPTION
S901	25035550	⚠	NPS-111-L512P,Push switch
R901	431523355	⚠	3.3Mohm,1/2W,Solid resistor <D>
C901	3500065A	⚠	DE7150FZ103PAC400V/125V IS capacitor
F901	252049	⚠	4A(ST-6),Fuse <D/W>
F902	252074	⚠	2A-SE-EAK,Fuse <P/W>
F901a	250113	⚠	SN5051,Fuseholder <D/W>
F902a	25050065	⚠	YSH-403T,Fuseholder <P/W>
	29360626-1		Fuse label <D>

TONE CONTROL CIRCUIT PC BOARD (NAAF-4336-2/2A)

CIRCUIT NO.	PART NO.	DESCRIPTION
	ICs	
Q401,Q402	222502	NJM4558D-X
	Capacitors	
C401,C402	354761009	10μF,35V,Elect.
C407,C408	354761009	10μF,35V,Elect.
C409,C410	374722234	0.022μF±5%,50V,Plastic
C411,C412	354780339	3.3μF,50V,Elect.
C413,C414	374722234	0.022μF±5%,50V,Plastic
C417,C418	354744709	47μF,16V,Elect.
C453,C454	374724734	0.047μF±5%,50V,Plastic
	Resistors	
R405,R406	5104228	N11RGHC250KWT22Z,Balance
R417,R421	5104229	N14RHC100KWT22Z,Tone
R418,R422		
R459,R460	5142001	N16RGP100KBTP25,Volume
	Switch	
S451	25035611	NPS-122-L573

VOLTAGE SELECTOR SWITCH PC BOARD (NASW-4338-2)
(Only Worldwide model)

CIRCUIT NO.	PART NO.		DESCRIPTION
S902	25065287	⚠	NSS-22113P,Slide switch

NOTE:<D>:Only 120V model
<P>:Only 230V and 240V models
<W>:Only Worldwide model

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